00108351

THE
ASIATIC SOCIETY OF BOMBAY
TOWN HALL, BOMBAY-1.

Digitized with financial assistance from

Government of Maharashtra

on 01 February, 2020

00108351

CONTENTS.

1. Review of Forest administration in the several provinces under the Government of India in 1873-74, by D. Brandis, Inspector-General of Forests to the Government of India, dated the 15th November 1875.
2. Report of Forest administration in Bengal for 1873-74, by W. Schlich, Esq., Ph.D., Conservator of Forests.
3. Review by the Lieutenant-Governor of Bengal, dated the 21st January 1875.
4. Orders of the Government of India, dated the 20th March 1875.
5. Report of Forest administration in the North-Western Provinces for 1873-74, by G. Greig, Esq., Conservator of Forests.
6. Review by the Lieutenant-Governor of the North-Western Provinces, dated the 23rd October 1874.
7. Orders of the Government of India, dated the 25th January 1875.
8. Report of Forest administration in the Punjab for 1873-74, by Captain W. Stenhouse, Officiating Conservator of Forests.
9. Review by the Lieutenant-Governor of the Punjab, dated the 15th October 1874.
10. Orders of the Government of India, dated the 3rd February 1875.
11. Report of Forest administration in Oudh for 1873-74, by Captain E. S. Wood, Conservator of Forests.
12. Review by the Chief Commissioner of Oudh.
13. Orders of the Government of India, dated the 27th January 1875.
14. Report of Forest administration in the Central Provinces, by Captain J. C. Doveton, Conservator of Forests.
15. Review by the Chief Commissioner of the Central Provinces, dated the 28th July 1874.
16. Orders of the Government of India, dated the 5th October 1874.
17. Report of Forest administration in British Burma for 1873-74, by Major W. J. Seaton, Conservator of Forests.
18. Review by the Chief Commissioner of British Burma, dated the 5th November 1874.
19. Orders of the Government of India, dated the 8th February 1875.
20. Report of Forest administration in Mysore for 1873-74, by Captain J. G. VanSomeren, Conservator of Forests.
21. Review by the Chief Commissioner of Mysore, dated the 7th October 1874.
22. Orders of the Government of India, dated the 25th February 1874.
23. Report of Forest administration in Coorg for 1873-74, by Captain J. G. VanSomeren, Conservator of Forests.
24. Review by the Chief Commissioner of Coorg, dated the 18th March 1875.
25. Orders of the Government of India, dated the 1st May 1875.
26. Report of Forest administration in the Hyderabad Assigned Districts for 1873-74, by A. T. Drysdale, Esq., Officiating Deputy Conservator of Forests.
27. Remarks by the Commissioner, Hyderabad Assigned Districts.
28. Review by the Resident at Hyderabad, dated the 8th September 1874.
29. Orders of the Government of India, dated the 19th December 1874.
30. Report on the progress of the survey of the Dehra Dún forests for 1873-74, by Captain F. Bailey, Superintendent of Forest Surveys.
31. Review by Colonel J. T. Walker, Superintendent, Great Trigonometrical Survey, dated the 5th February 1875.
32. Orders of the Government of India, dated the 11th March 1875.

Cx-6 11.

REVIEW

OF THE

FOREST ADMINISTRATION

IN THE

SEVERAL PROVINCES UNDER THE GOVERNMENT OF INDIA,

1873-74,

By D. BRANDIS,
Inspector-General of Forests to Government of India,

Dated 15th November 1875.

CONTENTS:

	Page.		Page.
I.—Reserved and Leased Forests	1—6	II.—Unreserved Forests	6—8
1. Area	1	7. Area	6
2. Meaning of the terms 'reserved' and 'unreserved' forests	2	8. Protection	7
3. Improvement of the reserves	3	III.—Yield and Financial Results	8—16
4. Protection from fire	3	9. General remarks	8
5. Plantations	4	10. Financial results of the year	8
6. Survey	5	11. Financial retrospect	11

I.—Reserved and Leased Forests.

Area.

The following statement exhibits the area of the demarcated reserves at the close of the year, as entered in the provincial reports:—

Provinces.	Reserves.	Leased Forests.	Total.	Remarks.
British—				
1. Bengal	119	...	119	
2. North-West	1,210*	...†	1,210	* Open to correction. † Leased forests in Native Garhwal not demarcated.
3. Punjab	3,700	196‡	3,896	‡ Includes 80 square miles in Bussahir erroneously entered as demarcated.
4. Oudh	823	...	823	
5. Central Provinces ...	1,902	...	1,902	
6. Burma	279	...	279	
7. Assam	318	...	318	
8. Coorg	375	...	375	
9. Ajmere	...	...	...	
Not British—				
10. Mysore	449	...	449	
11. Berar	632	...	632	
Total ...	9,807	196	10,003	

A few corrections, however, must be made. Thus, the return from the North-West Provinces includes 700 square miles in the Kúmaun division which were not actually demarcated. The forests of the Dehra Dún division,

comprising those of the Saharunpur district is entered at 485 square miles, while in reality their area was about 530 square miles. In Gorakhpur there are 125 square miles of demarcated Government forests which are not included under reserves in the return. In the Punjab 80 square miles of leased forests in Bussahir are included, though they are not actually demarcated.

But upon the whole, and excepting the North-West Provinces, the area returned may be regarded as approximately correct. In none of these provinces had the work of demarcation been finally completed. In Bengal and Burma it had only been commenced, and in Bengal large additions have, since the close of the year, been made to the area of the reserves. In Ajmere and Mhairwarra reserves were selected, but not finally demarcated during the year.

Of leased forests 116 square miles are demarcated in the Chumba territory; the leased forests in Bussahir and Native Gurhwal are not demarcated.

Meaning of the terms 'reserved' and 'unreserved' forests.

2. A few words should be said concerning the definition of the terms 'reserved' and 'unreserved forests.' The term 'reserve' has been used to designate forest lands reserved from sale, specially demarcated, and intended to be permanently maintained as forest to supply the requirements of the country. It is obvious that reserves may belong either to the State, to municipalities or to village communities. The great mass of the present reserves, however, belong to the State, and may appropriately be called State forests. They may be in charge of district or forest officers, and the rights of the State or other proprietor in the reserves may be either absolute, or limited by the rights of other persons. Thus in the British Pergunnah of Jaunsar two classes of public forests have been demarcated since the close of the year, both are in charge of the Forest Department, and both should be included under reserves. In the first class the rights of Government are absolute, the zemindars have no rights in them; they cannot enter them or take their cattle into them without permission. The area of the first class forests is 24 square miles. In those of the second class, which are more extensive, comprising 119 square miles, the zemindars may cut grass, the hill bamboo and certain descriptions of wood; they may graze their sheep and cattle, except in such blocks as are closed by the Forest Officer, but they may not burn the forest, and they may not break up any land for cultivation, except with the permission of the Forest Officer; moreover, by cultivating such land they acquire no rights of occupancy.

Again in the Dehra Dún and Saharunpur forests the villagers exercise the right or privilege of grazing their cattle on payment, except in certain blocks which are closed. But the whole of the Government forests in the Dún are demarcated and must be classed under reserves. The greater part of the Oudh forests is open to grazing and to the cutting of certain descriptions of wood, but they are demarcated, and neither these, nor the Dún forests, nor the second class forests of Jaunsar can be classed as unreserved forests.

On the other hand, in the Central Provinces, both in the reserves and the unreserved forests, the rights of Government are absolute, but the reserves are demarcated and intended to be permanently maintained, while the unreserved forests are not demarcated and are available for the extension of cultivation. Again in Burma, though a large area has been notified as Government forest by notification, the great mass of these are unreserved, as they are available without restriction for the extension of cultivation, and a limited area only has as yet been demarcated as reserves.

These remarks must not however be misunderstood. The area of demarcated reserves is intended to be permanently maintained as far as practicable. Where reserves are burdened with rights or privileges, portions of the reserved area will, in many cases, have to be given up in order to buy off those rights, or to secure to the right or privilege-holders the needful supply of forest produce outside the reserves. But speaking broadly it may be said, that reserves are demarcated forests, intended to be permanently maintained, while unreserved forests are not demarcated and are not intended to be maintained as forests. The final decision regarding the forest area which should be classed under reserved or unreserved can in many provinces only be come to gradually as experience is gained regarding the productiveness of the forests and the probable increase of

demand for timber and other forest produce. This will explain that, pending a final demarcation of the reserves, Government must retain its hold over the unreserved forests, for it is from these areas only that the reserves can eventually be increased, Briefly then it may be said, that reserves are demarcated public forests, which it is intended to maintain permanently, giving up from time to time such areas as may be required to free the remaining portion of prescriptive rights and privileges, and that unreserved or district forests comprise the forest lands at the disposal of Government not included within the reserves.

Improvement of the reserves.

3. A general descriptive account of the reserves in the different provinces with reference to boundary marks and boundary lines, the general character of the forest growth, the nature of their produce, the demand for it, and the requirements of the surrounding population, must be deferred, until demarcation has made more progress in all provinces. Much information on some of these subjects is contained in the first part of Mr. Baden-Powell's report for 1872-73. Nor will it be possible for this year to give an account of the yield in material, and the revenue from the reserves as distinct from the unreserved forests.

A few words should however be said regarding what has been done to improve the value and to increase the productiveness of these public forest domains. The shifting cultivation by cutting and burning the forest, which is called Kail or Kotang in the North-West Himalaya, Jhoom in Bengal and Assam, Toungya in Burma, Dhya in Central India, Valri on the Malwa plateau, and Kumri in South India, is not as a rule practised in the demarcated reserves. In some of the Burma reserves arrangements are made with the Karens to cut Toungyas on condition that they are planted up with teak, and in others Toungyas have not yet been stopped.

In a large portion of the reserves all fellings have either been entirely stopped, or they are arranged with due regard to the regeneration of the forest. The effect of mere protection from cuttings has in many cases been very marked and most beneficial. Thus, a large portion of the Dehra Dún forests, which had been cleared of all large trees before the mutinies, but which were completely demarcated by Mr. Fleetwood Williams between 1863 and 1868, has been grazed over and burnt annually ever since, and yet the mere protection from cutting has, within the last 10 years, completely altered their character. The result is that sâl, with a certain proportion of other trees, now forms compact masses of poles from 40 to 60 feet high. The first effect of restricted cuttings is to increase the cover overhead, and this is what a large proportion of the Indian forests require most of all. A similar effect of protection may be noticed in a few forest tracts in the vicinity of the Kosi River in Kúmaun.

Where, in addition to such protection, creepers have systematically been cut, the effect is excellent. A large portion of the sâl forests of Oudh was formerly a tangled mass of creepers which smothered the best trees or caused the stems to grow up crooked and irregular. The creepers were cut between 1863 and 1869, and the growth of the sâl and general character of the forest has been greatly improved thereby.

Protection from fire.

4. In the few reserves of the Himalaya and of the Punjab plains where cattle have been excluded, reproduction has generally been excellent. But the greatest improvement has been effected where it has been possible to protect the forest from fires. The change which has taken place in those forests of Oudh, of Berar and of the Central Provinces, which have escaped fire for a series of years is most remarkable. Blanks are gradually becoming stocked with self-sown seedlings, the grass disappears and the ground gets covered with leaves and other vegetable matter in various stages of decay. The ground remains moist, trees and bamboos remain green much longer in the hot season, and vegetation generally is more vigorous. The stems of saplings and poles, which have grown up since protection commenced, have a healthy smooth bark and are sound throughout, while the bark of the older stems is charred and the heart-wood hollow or decaying. The bamboos, where they are found in reserves protected from fire, benefit even to a greater degree and more

rapidly than trees. The improvement in the size and quality of the bamboos will go a long way to cover the outlay on fire protection in certain forests. Advantages of an indirect nature have commenced to manifest themselves, such as a more regular flow of the streams coming from the forest and a more plentiful water supply during the hot season.

The following statement shews the area of the forests protected from fire during the year. The aggregate area under protection at the close of the year was 6,33,682 acres or 990 square miles, and the total outlay on this account from the commencement has been—

Provinces.	Acres.	Total outlay.	Commencement of fire conservancy.
		Rs.	
1. Bengal	7,680	198	1872
2. North-West	74,306	2,152	.....
3. Oudh	12,800	275	1871
4. Central Provinces	133,460	35,687	1864
5. Burma	45,196	10,284	.....
6. Assam	11,520	92	1872
7. Mysore	11,520	.....	.....
8. Berar	337,200*	1,687	1870
Total	6,33,682	50,375	.....

The Central Provinces have taken the lead in this great work. The Bori Forest, measuring 23,680 acres, has been protected ever since 1864, and the Jagmandel reserve in the Mandla District, measuring 35,200 acres, ever since 1867. In the commencement these operations are always difficult, and it has not rarely happened that large areas which had been protected during one season were burnt the next. This of course is worse than no protection at all, for the damage done by fire in a forest that has been protected for some time is much greater than in a forest which has been burnt annually. The main principle therefore which should guide these operations is to extend them slowly, but steadily, in accordance with a well-considered plan.

A detailed account of the tracts protected from fire must be deferred for the present; suffice it to state, that in Bengal, Assam, and Oudh, the protection has been principally extended to sâl forests, and that of 74,306 acres reported to have been saved in the North-West Provinces, 20,550 acres were in the sâl forests of the Sub-Himalayan tract, *viz.*, 70 in Gorakhpur, 16,640 in Kúmaun (between the Kosi and Ramgunga Rivers), 3,840 acres in the Dehra Dún (closed block of the Eastern Sewaliks near Bulawalla). The balance of the protected area in the North-West Provinces, *viz.*, 53,756 acres was in the first and second class forests of Jaunsar on the outer ranges of the Himalaya between the Tonse and Jumna rivers, and the Mundhole Forest west of the Tonse. These forests are stocked with deodar and other coniferous trees. Their protection from fire is of great importance, but it is a less difficult task than the protection of the sâl forests at the foot of the hills. In the Punjab no special arrangements are made for fire conservancy, but it is understood that no reserve is ever fired. Fires in the Punjab and Sindh Forests are less common than in the rest of India, but when they occur they are extremely destructive.

In Burma, the Central Provinces and Berar it is principally teak and bamboo-producing forest that has been protected from fire, and in Mysore it is a mixed forest situated in the eastern or dry and open part of the country. The improvement of this tract, (the Devaroydroog range) will be most important eventually for the supply of fuel and small woods.

Plantations.

5. The following statement exhibits the area of plantations at the close of the year, and the extensions made during the year. The total area stocked at the close of the year was 23,165 acres, upon which a total outlay since the com-

* Includes 67,840 acres of Forest outside the reserves (unreserved Forest in the Melghat).

mencement of Rs. 9,58,389 had been incurred, or at the rate of Rs. 41 per acre:—

Area and Cost of Plantations, 1873-74.

Provinces.	Area at the commencement of the year.	Area added during the year.	Area excluded during the year.	Area at the close of the year.	Previous cost.	Outlay during the year.	Total outlay.	Remarks.
					Rs.	Rs.	Rs.	
Bengal	605	72	28	649	14,345	8,257	22,602	
N.-W. Provinces ...	700	129	...	829	12,412	3,631	16,043	
Punjab	21,970	1,452½	7,872	15,550½	5,30,675	72,448	6,03,123	
Oudh	180	...	...	180	3,382	2,713	6,095	
Central Provinces ...	288	13	...	301	46,720	389	47,109	
British Burma ...	2,024	213	...	2,237	1,38,320	30,333	1,68,653	
Mysore	1,008½	450½	...	1,459	32,674	18,803	51,477	
Coorg	416	10	...	426	15,422	4,843	20,265	
Assam	17	257	...	274	1,855	5,118	6,973	
Berar	721	539	...	1,260	11,139	4,910	16,049	
Ajmere	...	...	...	...	...	...	...	
Total ...	27,929½	3,136	7,900	23,165½	8,06,944	1,51,445	9,58,389	

The most important of these plantations are in the plains of the Punjab. They were first commenced by the late Dr. Stewart in 1864, and their object is to supply fuel for the consumption of towns and railways in addition to small building timber. The larger portion of the area is stocked with sissoo, but a few tracts in the eastern part of the Punjab, where frosts are less severe, have been planted with kikar (*Acacia arabica*). Small areas in the Punjab and the North-West Himalaya have been planted with deodar. In Bengal and Assam the India rubber tree (*Ficus elastica*), tún and teak have been cultivated. In the appendix to the Bengal report will be found the record of the Bamunpokree plantation (tún and teak mixed), regarding which the Government of India in their orders on that report said, that, with the needful modifications, it might serve as a model for plantation records in other provinces.

In Burma, the Central Provinces and Berar the plantations in the reserves are principally stocked with teak. In Mysore extensive areas have been planted in the vicinity of Bangalore with different species mainly for the production of fuel. In the western forests of the province, and in Coorg, however, teak and sandalwood have been planted with considerable success.

In some cases plantations on a large scale are necessary, even at the present high rate of expenditure, to ensure a sufficient future yield of wood and timber, but, as a rule and for a considerable time to come, the regeneration of the forest in the reserves must be effected by self-sown seedlings, or in coppice woods by reproduction from stools. Plantations, however, on a small scale are necessary in all forest districts, to increase our knowledge of the mode of growth and the requirements of the principal trees, which compose our forests.

Forest survey.

6. Detailed maps are useful for the management of all extensive landed estates, and are essential for the good management of forest lands. Forest maps are required to facilitate the regular work of administration and protection; they are necessary to furnish a complete and practically useful record of boundary lines and boundary marks, and they become indispensable whenever an attempt is made to regulate the working of forests in a systematic manner. In 1872 an establishment was organized under the Government of India, and designated as the forest survey and working-plan branch. The object was to organize a special agency which should be available for the topographical survey of the Government forests and the preparation of working plans. The first work entrusted to it was the survey of the Government forests in the Dehra

Dún and Saharunpur districts, and the following report by Captain Bailey, the Superintendent, gives an account of what was accomplished in 1872-73 and 1873-74:—

Field season 1872-73.—I commenced to raise the establishment in December 1872, and undertook the survey on the scale of 4 inches=1 mile of the forests of the Dehra Dún Division.

During that field season the following work was done:—

I. 85 points were fixed by triangulation.

II. The boundaries of the forests in the Western Dún and Western Siwáliks were traversed by theodolite and chain, as also were three village circuits.

Total length traversed 182 miles.

III. Lines traversed by prismatic compass within the forest, 45 miles.

IV. Raus surveyed by chain triangulation, 26 miles.

Recess of 1873.—We came in from camp on the 3rd June, computed and plotted the work done in the field, and, as soon as the heavy rains were over, commenced a survey of the station of Dehra, on the scale of 12 inches=1 mile, for the purpose of instructing the establishment in traversing and plane-tabling.

This survey was however not completed, and when we took the field, I made over the work to Captain Thuillier, R.E., who is engaged in surveying the non-forest portion of the Dún.

Field season 1873-74.—We commenced to move into camp on the 1st November, and did the following work during the ensuing field season:—

Plane-tabling completed	144½ square miles		
„ partly done	15¼ „		
Total ...		...	159¾ square miles.
Boundary traversing with theodolite, computed	22 miles		
Boundary traversing not computed ...	280 „	...	302 miles.
Interior traversing by theodolite, prismatic compass or card protractor computed, and closing points interpolated	255 „		
Interior traversing not computed ...	99 „		
„ „ plotted by angles ...	180 „		
			534 „
	Total	...	836 „

Thus, by the end of that season an aggregate of 484 miles of outer boundaries had been traversed with the theodolite, and 579 miles of interior lines had been traversed with various instruments; total 1,063 miles. The topography of the detached forests of Ambári, Chándpur, and Dholkot had been completed; the remainder of the ground topographically surveyed lying at the western end of the Siwálik range.

During the season of 1873-74, 10 pucka bench marks were erected on trigonometrical stations, and 290 sheets of Mr. Reynold's Hazára map were colored and distributed.

The expenditure incurred on this account was—

	Rs.
In 1872-73	21,178
„ 1873-74	50,272

As regards the professional work of topographical survey the operations of the Forest Survey Branch were placed under the supervision of Colonel Walker, the Superintendent of the Great Trigonometrical Survey.

At the same time surveys were undertaken and forest maps prepared, as the work required them, by the local forest officers in Bengal and other provinces. Data were also collected by the local staff in these provinces for the framing of preliminary working plans, and valuation surveys were made for the same purpose.

II.—Unreserved Forests.

Area.

7. No attempt will here be made to state the area of the large extent of forest and waste comprised under this name. In the Punjab and part of the North-West Provinces the unreserved forests are not extensive, because

the total forest area at the disposal of Government was so small that nearly all is included or is intended to be included in the reserves. An exception to this are the rakhs in the plains of the Punjab. Here a larger area was at first included in the reserves; this is intended to be maintained under wood, and in respect to these lands, it is not impossible that a large portion will be formed into village forests to provide a regular supply of pasture to the agricultural population, selected blocks only being retained as Government reserves. In the inner hills of Garhwal and Kumaún, there are still extensive unreserved forests at the disposal of Government. In Oudh no unreserved forests exist; the forest area at the disposal of Government in that province is so limited that it was necessary to include every available forest within the limits of the reserves. In Palamow, Chota Nagpore, Sikkim, the Dooars, Assam, the Chittagong Hills, and the Sunderbuns, the area of the unreserved forests at the close of the year was very extensive, but, as already stated, demarcation was progressing and a large extension of the reserves was contemplated.

In the Central Provinces the area of the unreserved or district forests is estimated at 17,600 square miles, the largest extent being in the following districts: Mandla 2,293, Chanda 254, Nímar 1,658, Síroncha 1,624, Raipur 1,377 square miles. Some districts have only a limited area, thus Wardha 200 and Narsinghpur 191 square miles; Sambulpur has none, all forest land in this district being private property.

In Burma 2,206 square miles are reported as unreserved forests, but in reality their extent is very much larger. The area to which the rules of 1865 were made applicable measures upwards of 10,000 square miles, and this is only a portion of the total forest area at the disposal of Government.

In Berar the area of the unreserved forests is given as 3,726 square miles. In Mysore the forest lands at the disposal of Government outside the reserves are styled district forests; no estimate of their area is given.

Protection.

8. Considering the large area of forests, both reserved and unreserved, the protection of which is attempted, the number of prosecutions for forest offences is very small. The number of prosecutions, convictions and acquittals in the different provinces appears from the following statement:—

Provinces.	Number of persons.		
	Prosecuted.	Convicted or under trial.	Acquitted.
Bengal	9	5	4
North-West Provinces	371	276	95
Punjab	507	491	16
Oudh	29	29	.....
Central Provinces	619	583	108
Burma	29	23	6
Assam	14	6	8
Coorg	6	6	.....
Ajmere	.....	.....	.....
Mysore	699	553	146
Berar	447	341	106
Total ...	2,730	2,313	489

Captain Doveton's returns for the Central Provinces classify the offences as follows:—

	Number of persons prosecuted.
1. Injury done to forest by fire	8
2. Unauthorized felling or appropriation of timber	500
3. „ appropriation of minor forest produce	61
4. Grazing without permission	34
5. Unauthorized breaking up of forest land for cultivation ...	16
Total ...	619

In some forest districts the small number of prosecutions may doubtless be explained not by the absence of offences, but by the imperfect protection as yet attempted, and by the great difficulty of discovering the offenders. Thus

it is almost impossible to discover and bring home to the guilty person the firing of a forest in the hot season. And therefore as protection becomes more strict, the number of prosecutions must necessarily increase. On the other hand, it will have been seen, from the remarks made in the preceding paragraphs, that the work of the Forest Department will gradually and steadily be more concentrated upon the demarcated reserves, and it may reasonably be expected that in the unreserved forests, as further progress is made in that respect, the number of forest offences and prosecutions will decrease instead of increasing.

III.—Yield and financial results.

General remarks.

9. The forests in the provinces referred to in this review are worked under two different systems. Under the departmental agency system the timber or other forest produce is brought from the forest to depôts or other places of sale on account of Government. Under the license, permit or naka system, the produce is sold in the forest and removed by purchasers. Under the last-named system may also be classed the revenue realized from grazing dues. In forests worked by departmental agency an account is kept of the timber or other produce removed from the forests, but this is not always practicable under the license or naka system. For this reason our accounts of the yield of the forests in material cannot at present be complete.

The revenue, however, which is realized by the license system affords some indication of the quantity of produce removed or consumed. This indication cannot be complete, because large quantities of forest produce are consumed or removed without payment by persons or village communities who have rights or privileges in the forests. It is obvious that under these circumstances complete statements of the yield of the Government forests in the different provinces cannot be drawn up. The information which eventually it will be necessary to have in order to judge of the progress made in their management will be the annual yield of the demarcated reserves, and whether they are worked by Government agency, or whether the produce is removed by purchasers, or whether it is consumed or removed by rightholders, these data will, in future, have to be completely collected. At present, however, most of the reserves are worked sparingly, protection against injury and attempts at improvement being the principal work carried on in them. The consequence is that in many provinces the main portion of the annual yield is drawn from the unreserved forests, and that they furnish by far the greater portion of the revenue. Under these circumstances no attempt will be made in this review to state the yield in material of the reserved and unreserved forests in the different provinces. A few remarks on the subject will be made in connection with the financial results.

Financial results of the year.

10. The statement annexed exhibits the revenue and expenditure during the year under the different heads.

Summary of Revenue and Expenditure during the year 1873-74.

Budget Headings.	Bengal.	North-Western Provinces.	Punjab.	Oudh.	Central Provinces.	Burma.	Mysore.	Coorg.	Berar.	Assam.	Ajmere.	Survey Branch.	Total.	Remarks.
Revenue—	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
1. Sale of timber at depôts	13,434	11,80,285	4,69,554	1,56,682	57,122	5,25,827	3,53,943	73,141	21,453	4,686	14		28,61,141	These totals comprise the figures of all the provinces except Mysore, no details having been given for that province.
2. Ditto removed by purchasers	49,862	2,44,628	90,654	1,04,725	80,859	1,40,313		582	1,03,309	3,646	...		8,19,725	
3. Duty on foreign timber	...	15	...	...	...	1,91,400		...	...	...	...		1,91,415	
4. Permit fees and rent of jungles and privileges	...	15,674	5,342	...	2,44,719	9,051		21,751	...	...	...		2,96,537	
5. Grazing dues	1,038	30,763	1,54,124	27,327	1,18,183	...	1,42,000	94	1,04,386	...	...	*Nil.*	4,35,915	
6. Sale of fruits and other minor forest produce	49,817	1,50,490	2,546	6,143	56,694	...		3,552	24,055	52,244	...		3,45,596	
7. Sale of drift, waif and confiscated timber	...	1,336	142	1,635	861	1,86,629		5,456	199	...	55		1,96,258	
8. Fines and forfeitures	165	2,360	4,179	218	1,602	1,067		337	812	...	...		10,740	
9. Miscellaneous	2,317	3,945	5,999	6,451	8,327	14,304		166	9,042	2,150	439		53,140	
Total	1,16,633	16,29,496	7,32,540	3,03,181	5,68,367	10,68,621	4,97,060	1,10,079	2,63,256	62,726	508	...	53,52,467	
Expenditure—														
A.—Conservancy and Working.														
1. Timber expenses	8,905	7,25,319	2,07,868	69,514	58,720	2,54,493	58,008	7,068	1,769	2,570	8	...	13,94,242	
2. Purchase of stock and cattle	920	1,179	4,635	41,585	8,574	13,647	105	388	2,155	6,380	1,308	7,351	88,227	
3. Feed and keep of cattle	2,245	9,424	641	3,856	14,509	11,818	576	28	2,647	2,827	62	69	48,702	
4. Rent of leased forests	...	10,120	51,234	...	5,891	...	...	...	17,120	883	...	...	85,248	
5. Charges in collecting revenue	5,007	23,276	259	3,820	53,829	...	127	...	11,641	2	32	...	97,993	
6. Plantations	8,292	6,309	58,108	5,067	3,468	36,370	19,048	4,918	6,498	5,119	11,856	...	1,65,053	
7. Forest work	221	10,615	1,379	2,233	15,578	12,031	488	7,390	1,420	393	1,810	...	53,558	
8. Forest survey	2,007	188	...	...	...	...	56	...	...	31	241	...	2,523	
9. Timber experiments	...	...	...	...	132	...	96	5	...	...	...	...	233	
10. Communications and buildings	942	35,383	30,333	25,103	6,309	4,032	33,956	3,204	867	571	460	...	1,41,160	
11. Miscellaneous	13	...	...	...	...	...	...	...	...	125	...	...	138	
Total	28,552	8,31,813	3,54,457	1,51,178	1,67,010	3,32,391	1,12,460	23,001	44,117	18,901	15,777	7,420	20,77,077	
B.—Establishments.														
1. Salaries	44,807	1,15,767	1,88,350	36,134	92,416	1,20,858	83,497	6,581	31,440	24,903	6,000	35,027	7,85,780	
2. Travelling expenses	10,190	21,802	42,660	8,718	14,769	14,736	12,807	4,452	6,313	5,933	1,525	5,556	1,49,461	
3. Contingencies	1,939	7,124	11,695	3,404	9,361	6,546	27,469	675	3,770	885	1,038	2,269	76,175	
Total	56,936	1,44,693	2,42,705	48,256	1,16,546	1,42,140	1,23,773	11,708	41,523	31,721	8,563	42,852	10,11,416	
Total Expenditure	85,488	9,66,506	5,97,162	1,99,434	2,83,556	4,74,531	2,36,233	34,709	85,640	50,622	24,340	50,272	30,88,493	
Surplus	31,145	6,62,990	1,35,378	1,03,747	2,84,811	5,94,090	2,60,827	75,370	1,77,616	12,104	23,832 D	50,272 D	22,63,974	

The classification of the items of receipts and expenditure was adopted in 1864; it is imperfect, because it was considered necessary at that time to accept certain heads of account which had existed in the civil accounts previous to the formation of the Forest Department.

In the following statement an attempt has been made to exhibit totals of the main heads of receipts and charges in accordance with a more rational classification, as far as the data at disposal will permit:

RECEIPTS.

	Rs.	Rs.
I. Timber and wood brought to depôts on Government account (1)		28,61,141
II. Timber and other produce removed or consumed by purchasers:—		
1. Timber and wood (2)	8,19,725	
2. Minor produce (4 and 6)	7,84,133	
3. Grazing (5)	4,35,915	
		20,39,773
III. Drift, waif and confiscated timber (7)		1,96,258
IV. Duty on foreign timber (3)		1,91,415
V. Miscellaneous, including fines (8, 9)		63,880
Total Receipts		53,52,467

CHARGES.

A. Conservancy and working:		
I. Timber expenses (1) including half of purchase and keep and feed of stock and cattle (2, 3)	14,62,706	
II. Charges in collecting other revenue (5), (including half of 2, 3)	1,66,458	
III. Formation and improvement of the forests, including rent of leased forests and acquisition of forests ...		
1. Plantations (6)	1,65,053	
2. Work of conservancy and improvement (7) ...	53,558	
3. Topographical and valuation survey of forests (8)	2,523	
4. Experiments to test the value of timber of different kinds (9)	233	
5. Communications and buildings (10) ...	1,41,160	
6. Rent of leased forests (4)	85,248	
		4,47,775
IV. Miscellaneous		138
A. Charges for conservancy and working		20,77,077
B. Establishments		10,11,416
Total Charges		30,88,493

Several points in this arrangement are open to argument; thus, it might be said that the amount paid as rent to leased forests (Rs. 85,248) should be charged to revenue, and not to the capital expenditure incurred on the formation and improvement of the forests. The principal items of which this amount consists are the rent paid for the Chumba and Native Gurhwal forests, the seignorage paid to the Rajah of Bussahir, the share of forest revenue paid to the zemindars of the Hazara district, the payments made on account of the purchase of the Ahiri forests, and the allowance paid to the Melghat Rajahs on account of the Bairaghar reserve in Berar. These are periodical payments made for the acquisition, temporary or permanent, of forest lands, and therefore they are here entered under head III and not charged against revenue. A few minor corrections might in other respects be applied to the figures of the statement, but they would not materially alter the results.

These results are, that Rs. 28,60,000 were realized by the sale of timber brought to depôt on Government account, at an outlay of Rs. 14,63,000; that timber and other produce removed by purchasers and the grazing of cattle in the forests brought Rs. 20,40,000 at an outlay of Rs. 1,66,000, and that the other sources of revenue produced Rs. 4,50,000. For the formation and improvement of the forests was expended Rs. 4,48,000, and establishments cost Rs. 10,11,000. The principles which should regulate the allotment of establishment charges to the production of revenue and the formation, protection

and improvement of the forests, necessarily vary in the different provinces, but taking the provinces included in this review as a whole, the following proportions may be adopted:

One-half of all establishment charges should be charged to the formation, protection and improvement of the forests, and the other half should be equally divided between the two main branches of revenue. Adopting this principle, the corresponding main classes of receipts and charges will stand as follows :—

	Receipts. Rs.	Charges. Rs.
I. Timber worked on Government account ...	28,60,000	17,00,000
II. Produce removed by purchasers, including other revenue	24,90,000	4,00,000
III. Formation, protection, and improvement of forests ...	...	10,00,000
Total ...	53,50,000	31,00,000

Obviously the direction in which improvement must be aimed at is the decrease of the charges under I, and the increase of the outlay incurred for the formation, protection and improvement of the forests.

Financial Retrospect.

11. The following statements give the forest revenue and expenditure of all provinces during the last ten years. The financial results of forest administration in the Presidencies of Bombay and Madras, and of the Non-British territory of Mysore and Berar are added separately.

In examining these figures it should be remembered that in 1869-70 timber operations on a large scale were commenced in the Punjab and the North-West Provinces to supply the State Railways with sleepers. The effect of this was a large increase in the working charges of these two provinces, which produced, but not immediately, a corresponding increase in the receipts. These circumstances partly explain the diminished surplus of 1869-70 and 1870-71, in the provinces under the Government of India.

Statement shewing receipts and charges of the Forest Department throughout India, during the ten years 1864 *to* 1874.

RECEIPTS.

Provinces.	1864-65.	1865-66.	1866-67. (11 months.)	1867-68.	1868-69.	1869-70.	1870-71.	1871-72.	1872-73.	1873-74.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Bengal	...	38,584	50,555	75,687	2,24,546	1,13,753	1,19,678	1,39,088	1,49,851	1,16,633
North-Western Provinces	6,39,010	6,50,401	5,77,954	5,11,191	6,53,389	7,26,255	3,65,076	10,33,134	16,42,856	16,29,496
Punjab	2,95,730	2,08,050	2,31,470	2,79,297	3,45,164	3,94,132	10,40,368	7,35,002	6,52,994	7,32,540
Oudh	54,634	1,19,969	2,01,246	66,453	1,31,822	1,06,822	60,181	1,37,767	2,96,258	3,03,181
Central Provinces	89,307	2,02,644	3,67,095	3,49,491	3,50,536	4,16,020	6,58,120	4,47,764	4,81,673	5,68,367
British Burma	9,36,233	8,98,629	4,24,053	6,47,590	8,16,171	9,84,773	8,18,124	7,72,399	8,27,469	10,68,621
Coorg	1,02,218	1,08,257	31,934	77,746	74,448	1,08,152	74,067	92,453	84,424	1,10,079
Ajmere	...	...	...	...	...	...	...	...	24	508
Assam	...	...	...	...	...	...	...	...	...	62,726
Surveys	...	...	...	...	...	...	...	...	...	...
Total ...	21,17,132	22,26,534	18,84,307	20,07,455	25,96,076	28,49,907	31,35,614	33,57,607	41,35,549	45,92,151
Madras	3,11,778	3,26,204	3,38,608	4,24,184	3,91,179	4,95,789	3,39,762	4,18,882	4,18,767	4,64,194
Bombay and Sind	10,70,210	10,07,610	8,21,268	8,84,245	12,13,482	12,35,257	11,77,425	11,50,210	11,46,404	11,88,090
Total Revenue (British India) ...	34,99,120	35,60,348	30,44,183	33,15,884	42,00,737	45,80,953	46,52,801	49,26,699	57,00,720	62,44,435
Mysore	3,16,331	3,42,959	2,66,020	4,10,012	3,51,476	2,95,218	3,37,669	3,99,511	3,76,185	4,97,060
Hyderabad	2,368	15,106	43,574	53,446	84,556	1,45,481	1,77,329	1,55,544	2,59,861	2,63,256
Total Revenue (Mysore and Hyderabad) ...	3,18,699	3,58,065	3,09,594	4,63,458	4,36,032	4,40,699	5,14,998	5,55,055	6,36,046	7,60,316
Grand Total of Revenue ...	38,17,819	39,18,413	33,53,777	37,79,342	46,36,769	50,21,652	51,67,799	54,,81,754	63,36,766	70,04,751

A.—Expenditure on Conservancy and Working.

Provinces.	1864-65.	1865-66.	1866-67 (11 months.)	1867-68.	1868-69.	1869-70.	1870-71.	1871-72.	1872-73.	1873-74.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Bengal	2,092	19,480	89,326	1,41,382	95,581	61,004	26,272	43,907	28,526	28,552
North-Western Provinces	3,29,983	2,06,272	2,28,186	2,04,249	3,10,303	2,95,969	5,41,957	8,16,519	8,67,314	8,21,813
Punjab	1,62,120	1,94,110	1,76,950	1,75,920	1,93,516	5,55,375	10,30,005	4,78,003	5,45,068	3,54,457
Oudh	52,797	38,886	38,001	70,569	59,566	63,180	52,872	79,412	87,201	1,51,178
Central Provinces	35,610	38,504	46,817	1,13,068	1,86,925	3,65,801	1,95,251	1,24,621	1,33,666	1,67,010
British Burma	1,77,158	2,21,739	2,04,591	2,25,049	3,22,981	3,11,404	2,89,445	2,45,514	2,03,929	3,32,391
Coorg	4,688	3,995	4,425	5,354	7,175	22,851	14,822	20,714	18,324	23,001
Ajmere	.....	.....	.....	.....	.....	.....	.....	.....	4,878	15,777
Assam	.....	.....	.....	.....	.....	.....	.....	.....	.....	18,901
Surveys	.....	.....	.....	.....	.....	.....	.....	.....	8,303	7,420
Total ...	7,64,448	7,22,986	7,88,296	9,35,571	11,76,047	16,75,584	21,50,624	18,08,690	18,97,209	19,20,500
Madras	94,657	1,36,528	1,14,251	1,62,037	1,32,693	1,46,821	1,56,779	1,94,814	3,03,735	1,75,370
Bombay and Sind	3,17,699	5,63,067	4,36,470	3,32,175	3,87,412	3,28,985	3,84,638	3,27,729	4,34,612	4,11,547
Total (British India)	11,76,804	14,22,581	13,39,017	14,29,783	16,96,152	21,51,390	26,92,041	23,31,233	26,35,556	25,07,417
Mysore	14,022	42,979	32,165	52,317	59,274	44,252	81,061	87,326	95,959	1,12,460
Hyderabad	.....	.....	.....	2,184	6,552	22,018	43,034	62,759	45,062	44,117
Total (Mysore and Hyderabad) ...	14,022	42,979	32,165	54,501	65,826	66,270	1,24,095	1,50,085	1,41,021	1,56,577
Grand Total ...	11,90,826	14,65,560	13,71,182	14,84,284	17,61,978	22,17,660	28,16,136	24,81,318	27,76,577	26,63,994

B.—Expenditure on Establishments.

Provinces.	1864-65.	1865-66.	1866-67. (11 months.)	1867-68.	1868-69.	1869-70.	1870-71.	1871-72.	1872-73.	1873-74.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Bengal	6,604	16,292	14,881	24,223	30,676	34,870	60,186	64,429	71,090	56,936
North-Western Provinces	65,739	86,242	83,711	85,139	1,01,475	1,27,441	1,33,928	1,53,751	1,51,698	1,44,693
Punjab	84,665	77,968	78,680	97,955	1,15,828	1,58,279	2,03,951	2,27,321	2,50,874	2,42,705
Oudh	27,154	19,883	21,571	23,065	29,615	42,090	47,119	47,269	56,219	48,256
Central Provinces	61,946	74,994	81,041	99,031	1,07,730	1,08,445	1,12,182	1,07,059	1,14,171	1,16,546
British Burma	86,081	90,327	80,544	1,03,339	99,191	1,10,058	1,11,293	1,32,935	1,32,095	1,42,140
Coorg	4,201	8,654	7,127	8,610	9,301	10,231	9,777	10,267	11,340	11,708
Ajmere	.....	.....	.....	.....	.....	.....	.....	.....	8,177	8,563
Assam	.....	.....	.....	.....	.....	.....	.....	.....	.....	31,721
Surveys	.....	.....	.....	.....	.....	.....	.....	.....	12,875	42,852
Total of Establishment Charges ...	3,36,390	3,74,360	3,67,555	4,41,362	4,93,816	5,91,414	6,78,436	7,43,031	8,08,539	8,46,120
Total of all charges	11,00,838	10,97,346	11,55,851	13,76,953	16,69,863	22,66,998	28,29,060	25,51,721	27,05,748	27,66,620
Madras	95,300	1,17,054	1,02,920	1,26,223	1,37,779	1,39,870	1,38,081	1,50,902	1,74,412	1,77,814
Bombay	2,10,352	2,11,987	2,10,973	2,14,962	2,39,711	2,15,811	2,38,125	2,57,035	2,78,430	2,93,990
Total of Establishment Charges (British India) ...	6,42,042	7,03,401	6,81,448	7,82,547	8,71,306	9,47,095	10,54,642	11,50,968	12,61,381	13,17,924
Total of all charges (British India) ...	18,18,846	21,25,982	20,20,465	22,12,350	25,67,458	30,98,485	38,46,683	34,82,201	38,96,937	38,25,341
Mysore	53,018	54,768	53,823	57,725	60,677	59,998	64,381	71,776	96,159	1,23,773
Hyderabad	478	8,991	13,718	16,157	27,553	58,692	38,938	38,071	37,994	41,523
Total of Establishment Charges (Mysore and Hyderabad)	53,496	63,759	67,541	73,882	88,230	1,18,690	1,03,319	1,09,847	1,34,153	1,65,296
Grand Total of Establishment Charges ...	6,95,538	7,67,160	7,48,989	8,56,429	9,59,536	10,65,785	11,57,961	12,60,815	13,95,534	14,83,220
GRAND TOTAL OF ALL CHARGES ...	18,86,364	22,32,720	21,20,171	23,40,733	27,21,514	32,83,445	39,74,097	37,42,133	41,72,111	41,47,214

C.—Surplus Revenue.

PROVINCES.	1864-65.	1865-66.	1866-67. (11 months.)	1867-68.	1868-69.	1869-70.	1870-71.	1871-72.	1872-73.	1873-74.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
British India, excluding Madras and Bombay ...	10,16,294	11,29,188	7,28,456	6,30,502	9,26,213	5,82,909	3,06,554	8,05,886	14,29,801	18,25,531
The Presidency of Madras	1,21,821	72,622	1,21,437	1,35,924	1,20,707	2,09,098	44,902	73,166	(Deficit 59,380)	1,11,010
The „ of Bombay	5,42,159	2,32,556	1,73,825	3,37,108	5,86,359	6,90,461	5,54,662	5,65,446	4,33,362	4,82,553
Total Net Revenue (British India) ...	16,80,274	14,34,366	10,23,718	11,03,534	16,33,279	14,82,468	9,06,118	14,44,498	18,03,783	24,19,094
Mysore	2,49,291	2,45,212	1,80,032	2,99,970	2,31,525	1,90,968	1,92,227	2,40,409	1,84,067	2,60,827
Hyderabad	1,890	6,115	29,856	35,105	50,451	64,771	95,357	54,714	1,76,805	1,77,616
Total Net Revenue (Mysore and Hyderabad) ...	2,51,181	2,51,327	2,09,888	3,35,075	2,81,976	2,55,739	2,87,584	2,95,123	3,60,872	4,38,443
GRAND TOTAL OF NET REVENUE ...	19,31,455	16,85,693	12,33,606	14,38,609	19,15,255	17,38,207	11,93,702	17,39,621	21,64,655	28,57,537

A glance at these figures will shew that the financial transactions of the Forest Department under the Government of India have doubled during this period.

Two facts justify the expectation that they will continue to increase, and probably more rapidly than hitherto, *first*, the steady increase in the demand for building wood, especially of the smaller sizes for native houses, for bamboos and other forest produce in all parts of the country; *second*, the progress made in the demarcation and improvement of the reserves, which will gradually increase the productive powers of these forests, and will enable them more and more to supply the increasing demand for timber and other forest produce.

The work of demarcation and improvement of the reserves has not made equal progress in all provinces; but one thing is certain that only in those provinces, where steady progress is made in this work, will the Forest Department be in a position to provide permanently for the growing requirements of the country and to produce a steadily increasing cash surplus.

Govt. Central Press.—No. 347, R., A., & C.—29-2-76.—450.

No. 1280, dated Darjeeling, the 1st September 1874.

From—Dr. W. Schlich, Conservator of Forests, Bengal,

To—The Secretary to the Government of Bengal, Agriculture Department, Forests.

I have the honor to submit the annual administration report of this Department for the year 1873-74.

2. The report of the Chittagong Division has been entirely incorporated in my report, so that it need not be printed separately. The report of the Assam Division, I beg, may be printed separately, as the Chief Commissioner desires to be furnished with 50 copies.

3. With last year's report I submitted a map of the Mahanuddy terai range, which was published. This year I have eight maps of a similar description before me, which of course cannot be published; but I append them for His Honor the Lieutenant-Governor's inspection, with the request that they may be returned. There is, however, a map of the Bamunpokri plantation attached to Appendix IX which I should be very glad to see published, as it illustrates the formation of blocks and compartments in plantation tracts.

4. The divisional reports of Chittagong and Assam are appended.

TABLE OF CONTENTS.

	Para.
Introductory	1
SECTION I.—Inspection of Forests	5
Cooch Behar Division	6
Dumsong	6
Sunderbuns	8
Chittagong Division	21
Assam Division	29
Eastern Dooars	30
Garo Hills	41
Khasi Hills	51
Kamroop	53
Nowgong	54
Naga Hills	55
Seebsaugor	56
SECTION II.—Reserves	57
Cooch Behar Division	59
Darjeeling	59
Julpigoree	62
Palamow	64
Chittagong Division	65
Assam Division	75
SECTION III.—Protection and Improvement of Forests	79
Establishment	80
Breach of Forest Rules	84
Fire Suppression	87
SECTION IV.—Plantations	100
Cooch Behar Division	101
Rangbul plantation	101
Dhobi Jora plantation	102
Bamunpokri plantation	103
Mahanuddy and Gulma plantation	111
Ramshaihat plantation	112
Fallacotta plantation	113
Deodar	114
Sweet chestnuts	115
Chittagong Division...	116
Assam Division	130
Timber Plantations	130
Kulsi plantation	130
Makum plantation	134
Tippun Hill plantation	135
Rubber Plantations	136
Kulsi plantation	136
Chardooar plantation	143
Teak in Bengal generally	151
India-rubber trees in Bengal generally	154
Mahogany in Bengal generally	158
Plantation records	159
SECTION V.—Yield of the Forests	160
Cooch Behar Division	160
Chittagong Division	171
Assam Division	176
SECTION VI.—Financial	183
SECTION VII.—General	198
Elephants	198
List of trees in the Darjeeling District	199
Conservator's Tours	200
Programme of Work for 1874-75	201
Cooch Behar Division	201
Palamow	203
Sunderbuns	204
Chittagong	205
Assam	211
Services of Officers...	212

Statements exhibiting the Annual Accounts.

Form No. 21.—Annual summary of revenue and expenditure.
„ „ 22.— „ abstract account of the cash transactions.
„ „ 23.— „ statement of outstandings and liabilities.
„ „ 24.—Statement of timber brought to depôt.
„ „ 25.—Annual timber account.
„ „ 26.—Statement showing the amount realized on account of the different classes of timber.
„ „ 27.— „ „ „ expended on account of timber received from the different forest divisions.
Revised „ „ 28.—Annual account of revenue realized.
Area of reserved forests.
„ of unreserved forests.
„ of plantations.
„ of forest tracts protected from fire.
Prosecutions for breaches of forest rules.

APPENDICES.

Appendix I.—Form I.—List of trees, shrubs, &c., observed in the eastern Sunderbuns, by A. L. Home, Esq., Deputy Conservator of Forests, Bengal.
„ II.—Statement showing results of forest valuation survey of the eastern Sunderbuns (sundree, timber forests).
„ III.—Form I.—List of trees observed in the Garo Hills, Manda valley, by Dr. W. Schlich, Conservator of Forests, Bengal.
„ IV.—General description of the Sivok Hill Range, by J. S. Gamble, Esq., B.A., Assistant Conservator of Forests, Cooch Behar Division.
„ V.—Form II.—Statement showing the results of forest valuation surveys in the Sivok Hill range. Area of lower hill forest 7,328 acres (total area of range, 10,240).
„ VI.—Form I.—Statement showing the result of forest valuation surveys in the Mooraghat Sâl forest. Area of sâl tracts valued, 2,992 acres. (Total area of reserve, 7,680 acres.)
„ VII.—Form I.—Statement showing the results of forest valuation surveys in the Dainah Sissu forest.
„ VIII.—Showing the results of an examination of the concentric rings of 40 Sâl trees in the Pantan reserve, Kamroop District, Assam.
„ IX.—Record of the Bamunpokree plantation.

PROGRESS REPORT

OF

FOREST ADMINISTRATION IN BENGAL

For the Year 1873-74.

By W. SCHLICH, Ph.D.,

Conservator of Forests, Bengal.

INTRODUCTORY.

1. The year 1873-74 has again brought a great change to the Bengal Forest Department in consequence of the formation of the Assam Chief Commissionership. The Department was first established ten years ago by declaring certain tracts in the Darjeeling district Government reserved forests, the control of which was entrusted to the Superintendent of the Botanical Gardens at Calcutta, who shortly afterwards extended operations to the Western Dooars. Towards the end of 1867 a separate Conservator of Forests was appointed, who extended forest operations gradually over the Eastern Dooars, Goalparah district, which, with the Darjeeling and the Western Dooars subdivisions, ultimately formed the Cooch Behar Forest division. He next commenced operations in Assam as a second division, then in Chittagong as third, Bhagulpore the fourth, and Dacca the fifth division.

2. The above extension of operations was carried out without the staff necessary to do the work of the department effectually, and the consequence was that considerable changes were introduced in 1872. The forest officers in Assam were posted under the orders of the Commissioner of the division, the Conservator being only advising officer and controller of accounts. In Chittagong the Commissioner was made Conservator of Forests, whereas the duties of the Conservator of Forests, Bengal, dwindled down to those of a controller of accounts and adviser to the Government of Bengal, if called upon. Towards the end of 1872 the Dacca and Bhagulpore divisions were closed for a time, and the staff made available was thrown into the Cooch Behar and Assam divisions with the view of doing the work in these at least in an efficient and satisfactory manner.

3. The Department having been consolidated in Cooch Behar, Assam, and Chittagong, was on the point of expanding again and reassuming the work in Dacca and Bhagulpore, when towards the close of 1873-74 Assam, including the Goalpara, Cachar, and Sylhet districts, was formed into a separate administration, thus reducing the Bengal Forest Department to two divisions, Cooch Behar and Chittagong. However steps have been taken, and an establishment sanctioned, to bring 178 square miles of forests in the Palamow sub-district, Chota Nagpore division, under control and management. Moreover there is a prospect of the Sunderbuns forests being brought under this Department, and there are forests in the Bogra Collectorate waiting to be examined; so that the end of the year 1874-75 may find the Department grown again as much as the

cutting off of Assam had temporarily reduced it. In a financial point of view the change will not be a loss to this Department, since Assam has always shown a considerable annual deficit.

4. The present report for Bengal will be the last that deals with Assam, and the returns have been so arranged as to give first separately the data of the divisions which remain with Bengal, then those of Assam, and then the total.

SECTION 1.—INSPECTION OF FORESTS.

5. Owing to the fact that forest operations in Bengal have been extended over a small portion of the total area as yet, it will be necessary to keep up this heading for a number of years to come, until the preliminary inspection and examination of all forest tracts worth and advisable to take under proper management, have been completed.

COOCH BEHAR DIVISION.

DUMSONG, DARJEELING DISTRICT.

6. When the present reserves west of the Teesta were set aside for forest purposes in 1865, it was also said that all the sâl containing slopes east of the Teesta, in the so called Dumsong sub-district, up to an elevation of 3,000 feet, should be considered reserved forests. However, the tracts indicated in this peculiar manner have never been taken under management, and it has been arranged between the Deputy Commissioner of the district and the Conservator of Forests that the tracts to be reserved shall be marked off during the coming cold season.

7. The Conservator of Forests made a rapid tour through the Dumsong sub-district in October 1873, marching from the Teesta cane bridge to Kalimbong, Dumsong, Petong, Laba, Ambiok, close to the former fort of Daling, and thence down the Richu nuddy into the Western Dooars. Dumsong, as is well known, consists of ranges of hills interrupted by an endless number of water-courses, comprising an area of 485 square miles. The highest hill reaches an elevation of 10,364 feet. The vegetation resembles that of the Darjeeling hill territory, namely lower hill forests up to an elevation of about 3,000 feet, upper hill or temperate forest above 5,000 feet, and the two running into each other between 3,000 and 5,000 feet. The lower hill forest contains sâl (*shorea robusta*) and saj, two species of terminalia on the slopes towards the Teesta in good quantities, but very little on those towards the Western Dooars. India rubber (*ficus elastica*) is scattered in single trees near water-courses. The temperate forests are poor in magnolias, the best of the hill timbers, but they are rich in birch (*betula sp.*), chestnuts (*castanopsis sp.*), Engelhardtia, and also in oaks. With the exception of the slopes towards the Teesta and towards the Western Dooars, the forests are inferior in growth to those of the Darjeeling hills, the trees reaching neither the same height nor girth. In the western and northern parts of Dumsong joom cultivation has rapidly increased of late years, and no time must be lost in saving a sufficient area of forest from destruction. There is no or very little cultivation in the eastern and south-eastern parts.

SUNDERBUNS.

8. The examination of the Sunderbuns, which was commenced in 1872-73, has been completed during the year by Mr. A. L. Home, Deputy Conservator of Forests. The tracts examined in a summary manner during the year cover an area of 1,083 square miles, all situated in the Jessore district. They are bounded on the north by allotments leased out; on the south by the Bay of Bengal; on the west by the Shakbaria river, the Casitani, Cheilka, and Sunamuki khals, and the Morgul river; on the east by the Bhola and Huringottah rivers.

9. Regarding the constitution of the forests, Mr. Home reports as follows:—

"The forests are situated on numerous islands of various sizes divided off by large and small rivers, all affected by the tides and containing brackish water unfit for drinking purposes. The level of the islands is generally from one to two feet above high-water mark, and the forests are inundated only on the occasion of spring or other exceptionally high tides. The chief rivers traversing the tracts are—

"1*st*. The Shakbaria, on the west, which, joining with the Calputtua, becomes the Arpungasi river lower down.

"2*nd*. The Sipsah and Buddur, which unite and form the Morzal or Murjattah river to the south.

"3*rd*. The Pussur river, which runs from north to south through the whole tract.

"4*th*. The Bhola and Huringottah rivers, which form the eastern boundary.

"These main rivers are all connected one with the other within the tract by numbers of smaller channels, thus forming the islands on which the forests stand.

10. "The soil is composed of sand mixed with a large amount of decomposed vegetable matter. It dries very hard on the higher parts of the islands, and where the ground is low remains in a soft boggy state, into which a man sinks from one to two feet; the mire below the surface being of a dark colour and giving forth a decidedly offensive odour. The climate is comparatively good from the end of November to March, though during the whole year the tract is very unhealthy, fevers being always prevalent among the men employed in the forests. Heavy storms pass over the islands during the monsoons, when the forests are practically closed owing to the danger of navigation for native craft.

11. "The general outward appearance of the forests is a growth of bani with golpatta and hartal, which here attains a height of 15 to 20 feet, and keah, along the water-edge on shelving banks; and on steeper banks recently cut away by the action of the current sundri stands out occasionally pure, but as a rule mixed with a small percentage of gengwa, shingr, or nutmi. The islands are all covered with dense forest growth, and the outer edge once penetrated sundri is everywhere the prevailing tree, the under growth consisting of sundri seedlings, generally so densely packed on the drier ground that it is impossible to avoid trampling them under foot, and always very numerous, mixed with those of either of the above noted trees. The exceptions to this are in the north-eastern portion of the tract, lots Nos. 241 and 244, where cane-brake covers part of the ground, as it does also a great part of the leased allotments Nos. 239 and 240, the remaining area being sundri forest, and in the southern most portion, where gengwa outnumbers the sundri. It is evident that sundri does not arrive at perfection where the soil is penetrated with pure or almost pure sea-water, as it disappears as a full-grown timber tree in allotments Nos. 194 and 199, below which the water is salt and phosphorescent, and appears south and west of those islands only occasionally among the gengwa and goran of stunted growth, similar to that found in the western allotments. This will account for its non-appearance as a timber tree in the 24-Pergunnahs portion of the Sunderbuns, where the fresh water rivers traversing the tract are smaller than those in the Jessore district.

12. "I have made a further attempt to ascertain the age of standing sundri by inquiring from wood-cutters and others, and from information received from them, coupled with my own observation of the forests where fellings have formerly been carried on and large numbers of mature trees are now standing, I consider that from 25 to 30 years is the limit required for the production of a full-grown tree. Judging from the large number of mature sundri, standing and fallen, found dead all over the allotments, I do not think

it is a long-lived tree; for though no doubt many die from their top branches being blown off in the heavy storms that pass over these islands, moisture being thus admitted into the heart-wood and causing it to rot, a very large number of the dead trees examined by me were perfectly sound throughout. From this it would appear, no sign of borers or other wood-eating insects being present, that they had died a natural death, which may be taken as a proof that the forests are not worked to the full extent their growth would bear.

13. "The condition of the forests is decidedly healthy, they are completely stocked, the growth of the timber is most vigorous and generally straight (except in low swampy ground), free from large creepers, and the natural reproduction of sundri, seedlings of which tree form the chief undergrowth inside the islands, may be said to proceed as fast as it is possible for any tree under the most favorable circumstances to reproduce itself. The trees grow up very close together to a height of 40 to 50 feet, giving a bole of 18 to 30 feet without branching, the bole occasionally reaching 35 feet (I measured two trees, cut in block No. 230, loaded on a boat proceeding to Narail, Jessore district, 42 and 36 feet in length, with mean girth 46 and 37 inches respectively, the bole of the former tree 35 and of the latter 31 feet), and when mature, vary in girth form 4·5 to 6·5 feet, a girth of 6 feet and over being rare. The finest timber is found in the allotments east of the Pussur river, and in those north of lots Nos. 206, 205 and 235, on the west of that river; but the growth is not so fine in the forest to the extreme south of the Chota Sellagang, where, though straight and numerous, the trees are stunted compared with those found in the remaining portion of the tract, and do not attain a height of more than 30 feet with a bole of 18 to 20 feet, the foliage having generally a diseased appearance, and most of the mature trees bearing parasites, which is probably caused by the soil being saturated with almost pure sea-water, and therefore not suited to the production of sundri timber of the finest quality. The roots of the sundri do not penetrate deep into the ground, but spread laterally from 2 to 3 feet below the surface, sending out blind perpendicular tough shoots, which stand from 3 to 15 inches in height all round the parent stem; and where there are many trees very close together, walking through a sundri forest is something similar to finding one's way among a fine growth of inverted tent pegs.

14. "There are no timber depôts, properly so called, within the forests. The trees are felled in various parts of the tract, and dragged out either with rough ropes made by twisting the bark of the 'bola' (*Hibiscus tiliaceus*) or with the stem of the 'kelia lota,' a creeper, along rough tracks formed by placing branches of trees, about 4 feet apart, on the ground, to the banks of the smaller khals, of which there are large numbers in each allotment, when they are lashed on to either side of small boats and taken out to the main or large river, where the timber boats are anchored. The branches and upper parts of the trees are cut into 4 to 6 feet lengths for fire-wood and carried to the banks of the khals, where they are loaded on small boats and transported to the main anchorage. The anchorage is selected by the 'fakir' who has taken the particular allotment from which the timber is felled under his protection, and is generally situated opposite the spot on which the small tent-like huts, containing images of various forest deities, have been erected. Sundri is a heavy timber and will not float; the logs are therefore either loaded on the boats or lashed on to their sides with ropes and allowed to drag along under water. Occasionally two or three of the longest trees are laid across the top of the boat and others are tied to the projecting portions on either side with ropes of such length as to allow of the pendent logs being just covered by the water. The timber is thus exported to the various markets.

15. "The chief markets are the following towns in the Backergunge district:—Baolabahirgunge (sometimes called Kaligunge), south of Barisal; Jhalocati, and Nalchitti, to which places by far the largest portion of sundri timber finds its way in the first instance, and where boat-building is carried on to a large extent. Sâl from Nepal is also said to be purchaseable in the above markets. The timber is here converted (sometimes sawn, but more often split with edges and smoothed down with an adze) into planks and prepared for

mast-pieces, &c., and exported in large quantities to Calcutta *viâ* Culna and the numerous other markets in the 24-Pergunnahs, Jessore, and Backergunge. Very few sundri logs are carried direct to Calcutta. The next largest market to those above noted being Culna and Narail, in the Jessore district, where large numbers of boats are built. The timber on arrival at these principal markets is bought up by mahajuns, who have the boats built; and loading them either with grain, planks, or mast-pieces, &c., despatch them to Calcutta, where the boats are sold to fuel or grain-merchants. The following are noted as the minor markets:—

Division.	Districts.	Markets.
Presidency...	24-Pergunnahs	Harwah, Tanki, Buseerhat, Baduria, Goberdanga, Khanjia, Debhatta, Borodul.
Ditto	Jessore	Dumria, Jins Bazar, Mostubghatta, Japtha, Sarappur, Surkhali, Beshkhali, Kaligunge.
Ditto	Backergunge	Perozpore, Kewari, Gurkul, Burrisal, Sealghun, &c.

"The port of Morellgunge and the village of Pertabnuggur are the nearest market-towns to the sundri forests.

16. "The lines of export are very numerous, as the map shows. The following are those most frequented:—To Calcutta up the Sipsah river *viâ* the Menus and Ghutiakhali rivers and Corali khal to Kaligunge (24-Pergunnahs), or up the Calputtua to the same place, and thence *viâ* Jabuna river and Hinsi and the Kutta khals through the Ballighatta canal. All boats from the sundri forests for Calcutta direct are obliged to pass Kaligunge (24-Pergunnahs) except during very fine weather; and even then very few boatmen will risk the lower passage from the Mandah river down the Attara Banka and up the Roymungul river, as the latter place is so exposed. To Culna, up the Pussur river; to the chief markets in the Backergunge district *viâ* the Balisur river, Damuda nuddy, Kowkhali Jungulea, and Dhunsidhi rivers into the Bishkhali river. All the smaller rivers are frequented more or less by timber and fuel boats passing up to the numerous minor markets.

17. "There are no villages within the tract. I visited ruins of what appears to have been a fort, or enclosed court-yard, or square, built of burnt country brick, enclosing a tank about 120 feet square, in which the water is only slightly brackish. This is situated about 500 yards from the Morzal river above the Callir khal in allotment No. 233. The most perfect wall was not more than five feet in height, and its extreme length 380 feet. The cornice bricks and those inside the arches were cut or chiseled out with rough figures and ornamentations. There are said to be ruins of various buildings in the interior of this island, which is now as densely covered with forest as any of the adjoining lots—among others a musjid, or temple, said to have an arched roof and to be in a tolerably good state of preservation; but the tiger-pugs were too numerous and fresh, and especially round the tank, to render a further exploration inviting.

18. "I am not aware of any rights possessed by the inhabitants of the surrounding districts, but at present any one who is so disposed trades in timber and fire-wood from all parts of the forests. The 'fakirs,' who look after the spiritual wants of the wood-cutters, and by the use of numerous charms and incantations do their best to protect their bodies from the tigers, in consideration of which services they receive a share in the value of the timber exported, have great influence with all classes of men who carry on the trade, and may be said to be working the forests on their own account, as they point out the allotments in which timber is to be felled; and without the 'fakir's' countenance and protection no wood-cutter will enter any allotment. I have met numerous boats wandering about the rivers looking out for forests in which a 'fakir' has taken up his post. During my tour sundri timber was being felled in the following allotments:—

"Numbers 206, 208, 230, 232, 248, and at five points in the unallotted portion east of the Pussur river.

"The party working in No. 232 made an abrupt departure while I was anchored just opposite their head-quarters, in the Manki khal, having lost six men carried off by tigers within ten days; and I met the 'fakir' who had charge of the working party in No. 248 as I was going down the Pussur river, who was making off to some other allotment, he having lost three men during the previous week from the same cause. The working parties are continually shifting their positions from one cause or another, which accounts for no portion of the tract showing any appearance of being over worked."

19. It appears from the above that the sundri (*Heritiera littoralis,*) the most valuable of the timber trees, will not grow on soil which is exposed to water more than slightly brackish, but that it is found over the greater portion of the 1,083 square miles; that its growth is very vigorous and its reproduction everything that can be desired. The age at which the tree reaches maturity is estimated at 25 to 30 years. Judging from the surveys made by Mr. Home (see Appendix II), the average contents of sundri per acre would be as follows:—

Seedlings and saplings (under 3' girth) = 2,487 per acre.
Trees (above 3' girth) = 182 per acre.

Allowing even that the surveys made give results above the average, the forests must be called extremely rich—in fact inexhaustible for all practical purposes, considering the large extent of the area.

20. The question of deriving a revenue from the Sunderbuns is now before Government, and it is expected that a final decision on the subject will soon be arrived at.

CHITTAGONG DIVISION.

FORESTS ON THE NAAF RIVER.

21. The Commissioner and Conservator of Forests of Chittagong writes as follows:—

"The Assistant Conservator of Forests has during the year visited only one fresh tract, viz. that on the Naaf, in the extreme south. He has described the results of his inspections as follows:—

22. "From a little south of Ramu the country becomes woody, but does not continue so the whole way; on the contrary there are large gaps of open ground, parts of which are now being brought under cultivation, whilst others are covered with grass and scrub jungle. About five miles from the head of the Naaf the country again presents a timber-covered appearance; but when fairly in amongst the standing timber, you perceive the wreck of what must formerly have been a magnificent forest. The cyclone of 1872 has caused the fall of most of the trees, and I do not think that more than one is standing out of every ten that stood before the gale. From the description that was given to me of the appearance of this forest prior to its destruction, it evidently was one of the best stocked in the district; no top light penetrated, and it was passable along the Arrakan road for fully an hour in perfect shade.

23. "On the west bank of the Naaf there are isolated patches covered with trees, but nothing sufficiently valuable to attract any large number of wood-cutters. A few men now resort to them solely on account of their being able to cut without any charge.

24. "On the east side the forests are within the Arrakan district principally; but towards the source of the 'Pruma,' two streams, named the Big and Small Darges, flow into it out of the Chittagong Hill Tracts, and all forest produce cut in this locality passes down the 'Pruma' through the Arrakan district and enters Naaf. Owing to the establishment of forest toll-stations on the rivers of the Chittagong district, boat-building has increased in this direction, and it is estimated that full 2,000 boats are now constructed annually here. Ship-building has likewise been taken in hand, and whilst on my tour I saw a new vessel just launched of about 200 tons, built of jarul, with kurri knees and crooks, and kandel masts and spars.

25. "It has been suggested by the Assistant Conservator that as timber and other materials from the Chittagong Hill Tracts forests pass through Arrakan, arrangements might be made with the authorities in British Burmah for the levy of tolls on all produce that is brought down, and that the revenue might afterwards be allotted to either side in accordance with the proportion coming from the respective districts.

26. "The proposal appears to me to be advisable, both for the purpose of imposing some restriction on wasteful and indiscriminate felling of timber in the forests alluded to, as well as for the purpose of deriving a legitimate revenue; but I am of opinion that the proposal may stand over for the present, pending decision regarding the proposed transfer of the Cox's Bazar sub-division to Arrakan.

27. "The Assistant Conservator reports further that though anxious to do so, he has not visited the forests in the Lushai and Fenny country during the year through fear lest complications should arise with the wild tribes. With reference to these observations, and as regards this country, the Deputy Commissioner has offered the following remarks:—

"To my knowledge the aspect of the forest in the Lushai country does not differ materially from that on this side of the border till a distance is reached so far to the east that no trade in timber could possibly be carried on from there. Besides, even supposing the most valuable timber existed in that country within a reasonable distance from the border, there are no navigable rivers down which timber could be floated; and any one who has been in these hills knows that timber cannot be conveyed by land for more than a few hundred yards without costing more than it is worth. Mr. Davis is in error in supposing that there are any wild tribes on the Fenny. It is true there are some troublesome and quarrelsome Tipperahs there, but he need apprehend no violence from or complications with them, if notice of his visit is sent from this Office."

28. With regard to the subject discussed in paragraphs 25 and 26, the Conservator of Forests, Bengal, has to draw attention to the fact that, as far as he is aware, all timber except iron-wood, (*xylia dolabriformis*) is free in Arrakan, and consequently there would be some difficulty in taxing the portion coming into Arrakan from Chittagong, unless toll-stations are established on the boundary between the two, which will in all probability prove impracticable.

ASSAM DIVISION.

29. The Eastern Dooars and a portion of the Garo Hills, hitherto belonging to the Cooch Behar Division but now transferred to Assam, were inspected by the Conservator during November and December, and certain portions of them were afterwards examined in detail by Mr. W. Shakespear, who fell sick towards the end of the season and proceeded on leave to Europe. He submitted sketch maps of the Ripu, Chirung, and Sidli forests, with a set of valuation surveys and a general description of the forests. Unfortunately the map and survey statement of the Ripu forest was lost by the Post Office, and copies will have to be obtained from England in case the missing packet should not be recovered. The following remarks are based on the Conservator's own observations, augmented by Mr. Shakespear's data.

EASTERN DOOARS, GOALPARA DISTRICT.

30. The Eastern Dooars comprise a tract of country about 70 miles long from east to west and 27 miles broad from north to south, covering an area of 1,862 square miles. They are situated immediately at the foot of the Bhutan hills and north of Goalpara, the whole being a vast plain with slightly raised plateaus here and there rising to a hundred feet at the utmost. Numerous water-courses intersect the tract from north to south, most of which are dry during a great part of the year, the water disappearing close under the hills and reappearing in the southern part of the Dooars. The northern part is almost entirely uninhabited, whereas the southern part is fairly populated. The total

number of inhabitants amounts to 37,047, or 20 per square mile. Like the Western Dooars, the Eastern may be described as a grassy plain with forest tracts scattered over it. Of these the following were declared Government open forests under the rules of 1871:—

The Goma forest	.. ..	15,779 acres.
„ Ripu „	.. ..	41,635 „
„ Chirung „	.. ..	1,57,293 „
„ Sidli „	.. ..	47,600 „
„ Khairbunna forest	.. ..	8,039 „
	Total ..	270,346 „ or 422 square miles.

31. The forests may be classed as follows:—

Sâl forest.
Dry mixed plain forest.
Khair and sissu forest.
Savannah forest.
Evergreen mixed plain forest.

The composition of sâl and dry mixed plain forest is the same, the prevailing trees being:—

Sâl	*Shorea robusta.*
Akshi	*Dillenia pentagyna.*
Baura	*Terminalia Belerica.*
Kum	*Carega arborea.*
Sida	*Lagerstroemia parviflora.*
Gia	*Garuga pinnata.*
Bahala	*Semecarpus anacardium.*
Phulgogra	*Schima Wallichü.*
Simbola	*Bombax malabaricum.*
Udola	*Sterculia villosa.*
Ambolai	*Emblica officinalis.*
Kurma	*Bauhinia sp.*

In the sâl forest, sâl predominates, whereas it is found only here and there in the dry mixed plain forest.

The khair and sissu forest contains as usual—

Khair	*Acacia catechu.*
Sissu	*Dalbergia sissu.*
And a good deal of safet sirris ..	*Albizzia elata.*

The savannah tracts consist of grass with a sprinkling of trees, or no trees at all. The evergreen mixed plain forest is of the same description as that found all over Assam, containing in particular:—

Cham	*Artocarpus Chaplasha.*
Gunseroi	*Camphora glandulifera.*
Tun	*Cedrela Toona.*
Lauria (*Sonalu*)....	Mesua ferrea, the Assam iron-wood.
Jam	*Engenia Jambolena.*

The native names given above are all Mechi names.

32. The distribution is as follows—sâl, dry mixed plain, and savannah forests alternate in the western half; evergreen, savannah, and dry mixed plain forest in the eastern half of the Dooars; and khair and sissu forest is found along water-courses as usual.

33. *The Goma forest* has not been specially examined; it is reported to contain a good deal of young sâl, but no mature trees.

34. *The Ripu forest* contains dense tall grass, over which the trees are scattered in some parts in single trees, in others in groups of greater or less extent. Sâl appears chiefly in the southern portion, where it covers the ground well in some parts, the area of which is, however, a small fraction of the whole. In the centre and northern part sâl trees are found only here and there, but seedlings are plentiful in most parts of the forest. The trees now remaining are all of small girth. During a march of some 6 miles through the forest from south to north only 1 tree of 5′ girth, 6 of 4′, and very few even of

3′ girth, were observed. The growth, however, is in almost all parts very fair, although the trees have evidently suffered severely from jungle fires. Along both banks of the Pekua nuddy, for several miles from the foot of the hills downwards, a strip of khair and sissu is found. Of the former no large trees were observed, whereas a good many old sissu were noted. The line of export from the Ripu forest is down the Gurpala and Jakati, two small streams on the west of the forest, said to be fit for floating in the rainy season, and by which the timber can be brought to the Brahmaputra. The Pekua nuddy is unfit for floating for some distance south of the forest. When Mr. Shakespear's map and valuation statement have been recovered, it will be possible to form an idea of the area covered with sâl, and of its contents.

35. *The Chirung forest* may be separated into two blocks by the Saumoka river. That to the west of it comprises 88,088 acres, and the one to the east 69,205. The Saumoka may be called the western boundary of the Assam evergeen mixed plain forest, which here begins to take the place of sâl forest. This latter species is not met with except in single trees in the Chirung forest east of the Saumoka. On the other hand, the Chirung forest west of the Saumoka contains remarkably fine tracts of sâl, especially west of the Hel nuddy. There are comparatively few trees of 4′ 6″ in girth and upwards at present; but seedlings, saplings, and young trees, are so numerous, that this tract, if protected against cutting and cultivation, will become in 25 to 30 years one of the richest sâl forests in Bengal, capable of yielding hereafter 10,000 trees and upwards per year. From Mr. Shakespear's maps and valuation surveys it appears that the sâl forest occupies chiefly three blocks:—

One west of the Hel nuddy ..	..	24	square miles.
„ west „ Saralbanga ..	..	3	„ „
And one east of the Saralbanga	..	9	„ „
	Total ..	36	„ „

With the following sâl trees in them:—

Seedlings (under 1′ 6″ girth)	..	533,323
Saplings (1′ 6″ to 3′ „)	..	384,289
Young trees (3′ to 4′ 6″ „)	..	98,690
Trees (4′ 6″ to 6′ „)	..	18,490
Old trees (above 6′ „)	..	1,112
Total	..	1,035,904

or 45 trees per acre.

Khair and sissu forest is found on the banks of the Hel and Saralbanga rivers.

36. *The Sidli forest* may be called a continuation of the Chirung forest towards the south. It consists of alternate patches of sâl, savannah, and mixed plain forest, the latter being chiefly found in the northern part. The sâl forest, it may be estimated, covers about half the area, or 36 square miles, containing the following sâl trees:—

Seedings	..	982,471
Saplings	..	376,083
Young trees	..	49,608
Trees	..	5,820
Old trees	..	None.
Total	..	1,413,982

or 61 per acre. Although this is a higher figure than that given for the Chirung forest, the latter is more valuable, because it is richer in middle-aged trees, and their growth is superior.

37. The streams by which timber can be removed from the Chirung and Sidli forests are the Hel nuddy, from its junction with the Bursunjora the Bursunjora, which however, is very narrow and winding; the Longa nuddy;

the Saumoka, from its junction with the Kashikori, and the Champan nuddy, a stream navigable by boats at all seasons of the year, up to its junction with the Borobur nuddy.

38. Recapitulating now, it may be said that the Ripu, Chirung, and Sidli forests, which form one great block, contain at a rough estimate about 80 square miles of sâl forest, with some 2½ millions of sâl trees, saplings and seedings. If these forests are reserved and protected against cutting and cultivation, they will yield in course of time not less than 25,000 sâl trees per annum. All these forests have been heavily worked before the Dooars were taken from Bhutan. They are intercepted by numerous timber-paths running from north to south, which are now used for the transport of sâl-timber from the lower Bhutan hills to the floating streams. From statistics collected during the year, it appears that some 27,000 pieces of sâl, each 6 feet long, have been rolled from the hills down to the floating streams, and thence transported to the Brahmaputra.

39. It appears that many new cultivators have settled of late years in the southern portions of these forests, especially in the sâl tracts, and steps should be taken at once by the Assam Forest Department to prevent the destruction of the forests.

40. *Of the Khairbunna forest*, we know very little or nothing at present; but it appears from report that a large portion of it is stocked with khair, and probably with sissu.

GARO HILLS.

41. The Garo Hills district comprises the western portion of the spur which runs from the Indo-Burmese range towards Bengal. It is a hilly country throughout, the highest range reaching a height of about 4,500 feet, and running out into the plain towards the south, west, and north. The area of the district comprises 3,390 square miles, with an estimated population of 80,000 inhabitants, or 24 to the square mile. Almost the whole of the district is forest land, in which the Garos carry on joom cultivation.

42. Up to the present only the northern slopes have been examined; the Manda range by the Conservator of Forests, and the Kishnai and Jinari-Azagur ranges by Mr. Shakespear. The Manda range comprises an area of about 36 square miles, the Kishnai range 65 square miles, and the Jinari-Azagur range 122 square miles; so that the northern slopes which have been examined may be put down as covering 223 square miles. This tract consists of hills falling from about 2,000 feet in the southern parts to the level of the Goalpara plain.

43. The area is drained in the east by the Manda nuddy and its numerous feeders, of which the Chichira and the Bangshi are the largest. The two former contain a slight current of water in the cold season, and they are navigable by boats in the rainy season up to a short distance above their junction, which is effected about half way between Chima and Mejolgiri. The Bangshi is also navigable by small boats in the rainy season for some distance above its junction with the Manda. The Kishnai nuddy is navigable in the rains up to the village of Rongrongri, some five miles below Thapa. Its principal feeders are the Ronghri, Rongrong, Dumi, and Thapa joras, of which the last mentioned is navigable in the rains for a short distance beyond its junction with the Kishnai. The western part is drained by the Jinari, Azagur, and their feeders, of which the Drick and Doljong respectively are the largest. They are navigable in the rains, the Jinari to Rongokgiri; the Azagur about five miles within the Garo boundary; the Drick to Khamagiri, a few miles west of Gokulgiri; and the Doljong to Mechpara. The country is accessible by foot-paths kept up from village to village.

44. The under-lying rock seems to be everywhere of a granitic formation, especially gneiss. The soil is almost everywhere a light sandy loam of apparently good quality in the eastern valleys, but somewhat inferior towards the west. The climate is very damp.

45. The forest may be classed as *lower hill* forest containing sâl, with patches of deciduous mixed plain forest where the joras emerge from the hills. It has a partly deciduous aspect on the drier portions, and an evergreen aspect

near the water-courses. A list of the species of trees observed by the Conservator of forests in the Manda valley will be found in Appendix III. Mr. Shakespear has noted a number of additional species in the Kishnai and Jinari-Azagur ranges, but it has been found impossible to identify them. On the whole there is no doubt that the total number of species is considerably larger than that given in Appendix III, which should be considered as a commencement towards classifying the several kinds.

46. The most important tree is sâl, which grows in all parts of the tract, but particularly so in the eastern portion and less towards the west. It must have formed the chief constituent in former years, but cuttings and jooming have sadly reduced it. Jooming is carried on almost everywhere in regular rotation. The Garo villages occupy each a circle of up to five miles radius, within which by far the greater portion is periodically cultivated. The mature sâl trees formerly found in the more accessible parts have all been removed, and it is only some miles from the floating streams that trees upwards of 3 cubits in girth are still found; but even there they are not numerous, owing to jooming having been carried on for many generations. Seedlings and saplings, for the same reason, are only limited in number. The localities where trees of upwards of 3 cubits are chiefly found now are, in the Manda range—

(1) Around Gabula, and towards the south of it;
(2) Immediately north of Bangshi; and
(3) On some of the low hills near Chima.

Single trees are found everywhere. The total number of trees of the above-mentioned girth in this range is estimated at less than 4,000. In the Kishnai range Mr. Shakespear estimates that not more than 300 trees upwards of 3 cubits girth could be found, and in the Jinari-Azagur range not more than about 700; so that not more than 5,000 sâl trees of upwards of 4′6″ girth can be counted upon in the whole area of 223 square miles. The growth of the sâl trees, as well as that of the trees generally, is very vigorous, and bamboos form a large admixture, especially in the eastern part of the tract. Joom cultivation is a bar to a favorable regeneration of sâl, unless it could be kept out of certain areas, a question which may now be considered by the Assam authorities. The Conservator fears, however, that any restriction to jooming in the case of an uncivilised people like the Garos will be difficult to effect.

47. Of other species, *bolashari* (*Lagerstroemia Reginæ*) deserves special mention. It is rare in the Manda range, but appears in large numbers in the Jinari-Azagur range. *Boldak* (*Schima Wallichii*) grows most luxuriantly; *Chambu* (*Engenia Jambolena*) is exported; and figs, oaks, and chestnuts are found everywhere, the latter two always near water-courses. Of India-rubber (*ficus elastica*) only one seedling has been observed.

48. At present only sâl, and to a limited extent *bolashari*, are cut for export. The forests are worked by so-called dafedars, who obtain permission from the Deputy Commissioner of the district to cut timber, to bring it to a place near the Brahmaputra, where the pieces are counted by a subordinate of the Deputy Commissioner, and to pay for each piece (6 feet long) at a certain rate. This rate used to be 4 annas, but a revision is now under consideration or has been effected. The dafedars send gangs of wood-cutters into the forest who cut the timber into pieces from 6 to 7 feet long, roll and push them to a spot on one of the floating joras which can be reached by boats, and during the rains the timber is floated or boated away to the Brahmaputra and to Goalpara, where it is sold. Pieces of a girth upwards of 4 feet fetch from Rs. 8 to Rs. 16 per pair, according to size and quality. A great portion of this timber is taken down the Brahmaputra towards Serajgunge and Dacca. In addition young trees are cut up into house-posts, measuring up to 3 feet in girth, and some 18 feet long; they fetch from Rs. 3 to Rs. 4 per pair. *Bolashari* is paid for at the rate of Rs. 3 to Rs. 6 per pair of pieces 9 feet long. The mode of working is very wasteful, and the Conservator estimated that

not more than 50 per cent. of the marketable timber actually reach the Brahmaputra, the rest remaining in the forest to rot or to be consumed by jungle fires.

49. The forests are all considered as belonging to Government. The Garos claim the right to jòom, and in addition the laskas, or headman of the the villages, claim the forest produce as their own—an assumed right which, it appears, is not recognized by Government.

50. In addition to the above, inspection was carried out in several other districts of Assam, about which Mr. Mann reports as follows:—

JIRUNG FOREST, KHASI HILLS.

51. The Jirung forest was inspected with the view of reserving it. The Deputy Commissioner, by order of the Commissioner of Assam, summoned the Chief of Jirung and explained to him the object of conserving his forests and the measures necessary to effect this; but the Jirung people refused to have conservancy measures introduced, because if this was done they would not have the uncontrolled run of the forests to fell timber as they liked, and they were not willing to give up their right of jooming any part of it they might wish to bring under cultivation, without which they said they could not exist.

52. "No proposals regarding the other sâl forests inspected on the northern slopes of the Khasi Hills could be submitted for approval, since the boundary between the Kamroop district and the Khasi Hills is not settled as yet.

KAMROOP.

53. In the Kamroop district, away from the Khasi Hill boundary, three small blocks of sâl forest were inspected, measuring in the aggregate five square miles, and reports submitted to the Deputy Commissioner of the district, before applying for the Chief Commissioner's sanction for reserving them.

NOWGONG.

54. The forests along the foot of the Jynteah Hills, in the Nowgong district, were inspected for the same purpose, and two small blocks, measuring in the aggregate 0·9 square miles, and a bamboo forest measuring about 2·328 square miles, were selected, and the proposals submitted to the Deputy Commissioner of the district.

NAGA HILLS.

55. The extensive mixed evergreen forest between the eastern foot of the Rengmah Hills and the Rengmah Pani, situated immediately south of the present Nambor reserve, were inspected; an area of 327 square miles selected, and proposals submitted to the Deputy Commissioner of the Naga Hills for an expression of his opinion as to the advisability of reserving it. This forest is the chief source of timber supply for the Seebsaugor and Nowgong districts, since there are but very small areas of sâl forest in the latter district, and moreover without mature trees in them at present.

SEEBSAUGOR.

56. In the Seebsaugor district the mixed plain forest, situated between the Dehing and Brahmaputra rivers in the north, and the Dimu and Desang rivers in the south, was inspected with a view to having it reserved for the supply of timber for the eastern portion of the Seebsaugor district, and proposals were submitted to the Deputy Commissioner. This forest was selected, not because it is at all superior to the rest of the forests on the Dehing river, but because there are fewer villages in the neighbourhood, and less danger therefore of trespass and less interference with the inhabitants."

SECTION II.—RESERVES.

57. Steady progress has been made during the year in the formation and detailed examination of reserves in the Cooch Behar Division as well as in Assam. This work, if done in a satisfactory manner, takes a great deal of time, and several years more will be required to complete the work in the above mentioned two divisions.

58. The following table shows the area of the reserves at the beginning and end of the year 1873-74 :—

	Area at the beginning of the year 1873-74.	Added during the year.	Total at the end of 1873-74.
	In square miles.		
Cooch Behar Division	106	14	120
Assam Division	214	103	317
Total ...	320	117	437

In addition, 158 square miles in the Cooch Behar Division have been examined, valued, and mapped, of which about 100 will probably be declared reserves, and in Assam some 350 square miles are under discussion.

COOCH BEHAR DIVISION.

DARJEELING.

59. During last year a beginning was made towards a detailed examination of the reserves, by surveying, valuing, and mapping the Mahanuddy terai range, comprising an area of 8,404 acres. The results are recorded in paragraph 106, and Appendix D of the Annual Report for 1872-73. The Conservator has now to add the following remarks :—

The forest being chiefly sâl forest and khair and sissu forest, the working must be arranged with special reference to sâl and sissu. Of *sâl* we have in the range—

Young trees	27,814
Trees	5,360
Old trees	734
Total ...	33,908

Considering that it takes about 60 years for a tree of 3 feet girth to obtain a girth of 6 feet, and that the forest is somewhat poor in mature timber, and assuming that one-third of the trees are not fit to yield marketable timber, the range can be worked for the present up to 250 trees per year in a round figure. The best plan would be to suspend cuttings for about 10 years, but this is impossible on account of the large demand for timber. However with a yield of 250 trees per year the forest will gradually improve, and the yield will rise very considerably in course of time.

Of sissu we have—

Young trees	1,825
Trees	297
Old trees	17
Total ...	2,139

So that the present annual cuttings should not exceed 25 trees, if necessary, otherwise cuttings should be suspended altogether for 10 years. The felling of the other species of trees may be arranged according to circumstances and requirements.

60. During the present year the work was proceeded with in the *Sivok hill tract*, adjoining the Mahanuddy terai tract to the north. The examination was done by Messrs. Gamble and Fuchs, but owing to the illness of both these officers it has not been quite completed. The system of valuation survey was to take lines along the streams and the ridges between them, and, wherever practicable, across from stream to stream, but the exceedingly steep and precipitous nature of the hills almost entirely prevented any lines but those

of the streams and ridges being chosen. The detailed description of the range will be found in Appendix IV, from which the Conservator's few remarks are taken. The area of the range stands as follows:—

Lower hill forest ...	...	7,328 acres	= 11·45 square miles.
Hill Savannah with cultivation	...	2,912 „	= 4·55 „ „
Total	....	10,240 „	= 16 „ „

The boundaries are, on the *north* and *west*, the Silimbong ridge; on the east the Teesta; and on the south the Sivok river. The whole tract consists of hills with tolerably gentle slopes in the western part, covered by hill savannah with jooms made by Lepchas, and with steep slopes in the centre and eastern part, covered with lower hill forest. The line of export is down the Sivok and Teesta rivers towards Julpigoree and the Brahmaputra. The most valuable kinds of trees are—

Sâl	...	*Shorea robusta.*
Saj	...	*Terminalia tomentosa and glabra.*
Cheloni	...	*Schima Wallichii.*
Katus	...	*Castania and castanopsis sp.*
Tun	...	*Cedrela Toona.*
Champ	...	*Michelia sp.*
India-rubber	...	*Ficus elastica.*

The growth of the trees is most luxuriant. The quantity of growing material is calculated as follows:—

	Sâl.	Saj.	Cheloni.	Katus.	Tun.	Champ.	India-rubber.
Young trees 2-3 cubits	7,544	2,209	4,129	1,964	1,049	44	468 seedlings.
Trees 3-4 cubits	4,218	1,874	2,968	982	803	44	
Old trees above 4 cubits	4,307	4,218	3,281	580	1,406	44	1,116 trees fit to tap.
Total ...	16,069	8,301	10,378	3,526	3,258	132	1,584

or 41,664 timber trees of the better kinds, besides a large amount of less important trees. The amount to be cut annually must be regulated by the rate of growth of sâl, and the maximum yield per annum would stand for the present as follows in round figures:—

Sâl trees	...	...	...	...	180
Saj trees	...	...	...	...	100
Cheloni trees	...	...	...	...	120
Katus trees	...	...	...	...	50
Tun trees	...	...	...	...	50
				Total ...	500

The numbers for katus and tun are somewhat higher in proportion than the others, as the growth of these trees, especially that of tun, is faster than that of sâl.

61. With regard to the number of India-rubber trees, Mr. Gamble thinks that the estimate is probably somewhat above the truth, as this tree grows very locally, and as many of the survey lines passed through these localities. India-rubber grows in this tract perhaps more luxuriantly than in any other part of the Darjeeling district; and if plantations of the tree are to be established, the Sivok lower hill range should be chosen for the purpose.

WESTERN DOOARS, JULPIGOREE DISTRICT.

62. The Muraghat forests were examined in 1872-73, and by a notification dated the 14th March 1874 the following two blocks, comprising an area of 13·77 square miles, were declared Government reserved forests.

I.—*Muraghat Sâl Forest.*

1. *Area.*—

Sâl tracts	... ...	2,992 acres.
Savannah tracts	... .	4,688 „
Total	...	7,688 acres = 12 square miles.

2. *Boundaries.*—*North*, a line from the source of the Kanai nuddy to the source of the Garati nuddy; *east*, the Garati nuddy, then a short line to the source of the Ghairkuta nuddy, then the Ghairkuta nuddy; *south*, a line from the Ghairkuta across the Garati to the Kanai nuddy; *west*, the Kanai nuddy.

3. *Topographical description.*—Level ground drained by the Kanai, Garati, and Ghairkuta nuddies, which on joining form the Dudua, a nuddy fit for floating.

4. *Soil.*—A light sandy loam, occasionally with gravel.

5. *Description of forest.*—The reserve may be described as a grassy plain with patches and blocks of sâl forest scattered over it. The three chief blocks of uninterrupted forest comprise 1,927, 645, and 420 acres respectively. Sâl is by far the most numerous tree, and it is associated chiefly with—

Akshi	... ...	*Dillenia pentagyna.*
Kum	... ...	*Careya arborea.*

Besides these there is a limited number of the following species to be found:—

Cheloni	... ...	*Schima Wallichii.*
Sida	... ...	*Lagerstroemia parviflora.*
Baura	... ...	*Terminalia Belerica.*
Saj	... ...	*Terminalia tomentosa* (*a few only*).
Gia	... ...	*Garuga pinnata.*
A few Katus	... .	*Castanopsis sp.*
Horse Chestnut	... ...	*Aesculus sp.*

and others, especially a few *ficus laccifera* and *obtusifolia*. The growth of sâl is good all round, and excellent in many parts of the reserve. Where the fires are heavy, no creepers have been observed; but where sâl grows close together, it is much exposed to injury from creepers.

6. *Timber Depôts.*—There is a depôt on the Dudua, where the Julpigoree-Alipore road crosses it.

7. *Timber markets.*—The towns and villages in the Cooch Behar state.

8. *Lines of export.*—Down the Dudua to the Jaldaka and Brahmaputra.

9. *Villages within the reserve.*—None.

10. *Rights of surrounding population.*—None.

11. A *map* of the reserve on a scale of two inches to the mile has been prepared.

12. *Working plan.*—The growing stock of sâl has been calculated from minute valuation surveys made by Messrs. Fisher and Johnston, giving the following results:—

Seedlings (under 1′ 6″ girth)	... ...	95,744
Saplings (1′ 6″ to 3′ girth)	... ...	47,872
Young trees (3′ to 4′ 6″ girth)	... ...	18,550
Trees (4′ 6″ to 6′ girth)	... ...	1,496
Old trees (above 6′ girth)	... ...	15
Total sâl trees	...	163,677

As the forest, in consequence of former heavy cuttings, is now comparatively poor in middle-aged and old trees, it is proposed not to work it for the next ten years at any rate, but merely to protect it against fire, cutting, grazing, and cultivation. Dead and fallen trees will be worked out as a matter of course. Hereafter the forest will be capable of yielding several thousand trees per annum if not overworked before it had time to produce the normal stock of growing material.

II.—*The Dainah Sissu Forest.*

1. *Area.*—Sissu forest = 1,132 acres = 1·77 square miles.

2. *Boundaries.*—*North*, the Dainah river; *east*, an old bank of the Dainah river, then the Kulpani and Khairkata nuddees; *south*, the Khairkata nuddee; *west*, the Dainah river.

3. *Topographical description.*—The reserve consists of a strip of land about 3 miles long and from 1,000 feet to a mile broad, immediately on the bank of the Dainah river. The whole tract has been the bed of this river at one time, and consequently it lies below the level of the surrounding country.

4. *Soil.*—Sand and gravel.

5. *Description of forest.*—The reserve contains almost nothing but sissu (*Dalbergia sissu*) of very fair growth. It is insufficiently stocked at present, there being only about eight trees and seedlings per acre. If protected against fire, cultivation, cutting, and cattle, the forest will soon stock itself completely, as there are indications of the natural reproduction being easy. Hitherto cattle have eaten the young seedlings year after year.

6. *Timber depôts.*—None at present.

7. *Timber markets.*—The town and villages of the Cooch Behar state.

8. *Lines of export.*—Down the Dainah and Jaldaka to the Brahmaputra.

9. *Villages within the reserves.*—None.

10. *Rights of the surrounding population.*—None.

11. A *map* of the reserve on a scale of two inches to the mile has been prepared.

12. *Working plan.*—From the surveys made by Messrs. Fisher and Johnston, the forest contains at present the following stock of sissoo :—

Seedlings	906
Saplings	3,317
Young trees	3,339
Trees	1,177
Old trees	271
Total ...	9,010

For the next five years no timber, except dead and fallen trees, should be removed, but the forest should be protected against fire, cultivation, cutting, and especially against cattle. At the expiration of five years the working of the forest may be commenced by cutting annually about 50 trees, which number the Conservator has no doubt can gradually be raised to 1,000 trees per annum.

63. In addition to the above, *the Buxa plain forest* has been examined, valued, and mapped during the year by Mr. Johnston. The area of this forest amounts to 158 square miles, of which about 75 are covered with sâl forest, and 5 with khair and sissu forest, containing the following quantity of timber :—

Sâl—

Seedlings	1,402,338
Saplings	448,532
Young trees	256,207
Trees	158,549
Old trees	59,444
Total ...	2,325,070

Of these 474,200 are trees of upwards of 3 feet girth. Considering that a tree of 3 feet girth takes about 60 years to grow into a tree of 6 feet girth, and even assuming that one-third of the trees do not yield marketable timber, the forest is capable of yielding at once per annum 5,000 sâl trees, an outturn which, with judicious treatment, will be raised in course of time to double and treble that quantity, irrespective of khair, sissu, and cheloni timber. It is

expected that the valuable parts of this forest will soon be declared Government reserved forest. A detailed description of the tracts reserved will be given in next year's report.

PALAMOW.

64. It has been decided to bring the Palamow forests, comprising an area of 178 square miles, under proper management. An establishment has been sanctioned, and the different blocks will be examined in detail during the coming cold season with the view of declaring the valuable tracts Government reserved forest.

CHITTAGONG DIVISION.

65. The question whether reserves should be formed in Chittagong or not, has not been advanced during the year, beyond some general arguments, which are recorded by the Commissioner in the following words:—

"No reserves have been formed during the year, for reasons which will be stated hereafter. On the subject of reserves, the Assistant Conservator of Forests writes as follows:—

66. "In my last annual report I went into this subject, as I thought very fully, but it would appear that though the Deputy Commissioner and Commissioner supported my views, both possessing local knowledge of the country (as far as it is possible to have any knowledge of a *terra incognita*), the Conservator of Forests opposed the project of having no reserves. Want of sufficient knowledge of the forests undoubtedly bars one from speaking with authority; but the means of locomotion in the hills for minute forest examinations are extremely limited, and without elephants or other means of land transport it is impracticable to enter into the heart of forests. The water-communication is decidedly good, and as far as it has admitted of my visiting the forests, I may say I have taken advantage of it to the utmost. Further travelling would necessitate my going over the same country again without throwing more light in our way, each and all the streams having been explored and a general idea gained. To obtain minute details the work must be done piecemeal and considerable time devoted to the work, as the area is almost unlimited. Establishments to carry out the Conservator of Forests' views (given in paragraph 129 of the annual Forest Reports for 1872-73) would have to be entertained, for which estimates could be submitted on receipt of orders specifying the area required to be treated annually.

67. "As regards the question of reserves, allowing that we procure the information required on the subject of stock in our forests, and it is found of the utmost necessity to husband what is left in the forests to the utmost, it remains to be decided whether it would not be simpler that certain localities should be entirely and declaredly closed, and no felling whatever allowed above a stated point on some of the principal rivers, in preference to adopting the revenue system at present. It must be borne in mind, as Captain Lewin remarked last year on this subject, that by closing our forests we shall drive the timber trade into Arrakan; and I would point out that it would have the effect of reducing our revenue.

68. "As regards the question of reserves, I agree generally with the opinions expressed by my predecessors when negativing the proposal of forming reserves. I must add, however, that I have at present very little personal knowledge of the forests, and that I agree with the Conservator of Forests that the question should be still left open for further inquiry.

69. "The opinions of my predecessors and of the district officers on this subject may be summed up as follows:—

"(1.) A reserve, to be of any use in the Hill Tracts, must be of immense extent, as a forest, properly so-called, of any particular kinds of trees does not exist; trees of different kinds being scattered here and there.

"(2.) The formation of such reserves would greatly harass and restrict the hill-people, and would probably result in their leaving for Hill Tipperah, Arrakan, or the Lushai counry.

"(3.) A large and expensive establishment would be necessary to secure the *bonâ fide* closing of the reserved tracts, and it is more than doubtful whether the advantage to be gained would really compensate for the annoyance caused to the hillmen and the heavy expense which would fall on the Government.

"(4.) As far as the export trade is concerned, the object of forming reserves has been to a great extent secured by the system of passes and the checks exercised at the toll-stations.

"(5.) The establishment of reserves would introduce numerous strangers and foreigners into the Hill Tracts totally antagonistic in feeling, religion, habits and customs to the Hill Tracts.

70. "As at present advised, then, it appears to me that the formation of reserves is undesirable, and to some extent unnecessary. It would also, I think, be impolitic; for the introduction of many strangers into the hills would be as objectionable as giving the officers of the Forest Department full control over large tracts of the country to the prejudice of the district officer. This latter result would be unavoidable if reserves were made, for it must be remembered that the hillmen are assentially junglemen, and that if an officer has absolute control over the jungle, it is almost tantamount to giving him absolute control over the people.

71. "It appears, however, from the Deputy Commissioner's report that to a certain extent some portions of the forest may be said to have been already reserved. His remarks are as follows:—

"As a matter of fact there are reserves in the Hill Tracts, though not reserves in the technical sense of the word. Captain Lewin proposed that no person should be allowed to cut timber beyond the undermentioned places:—above Burkul, on the Kurnafoolie; above Purwah, on the Ryn Kheong; above Khagorea, on the Kassalong; above Phindukheong, on the Sungoo; and above the Legadakheong, on the Matamoree. The upper Kurnafoolie is now practically closed to wood-cutters, it being on the high-road to the Lushai country, and the resort of strangers thither being discouraged for political reasons. Permission is occasionally given to cut timber there with restrictions on the quantity and size to be felled.

72. "A new proposal has now been made by the Assistant Conservator of Forests, and he recommends that the hillmen as well as the plainsmen should be forbidden from resorting to any forest to cut timber, whether logs, boats, or scantlings, without having in his possession a permit given by him, the Assistant Conservator, personally. He is of opinion, in short, that the present practice, by which hillmen are allowed to go to the forest and cut wherever they chose, entirely uncontrolled, should be put a stop to, though it may cause some inconvenience to them, as no proper check on the quantity to be felled yearly can be kept so long as the existing custom is allowed to prevail.

73. "I am not prepared to recommend any extension of the present rule, under which only those persons who go from the plains to the hills for the purpose of cutting timber for their own use, or for sale, are required to take a pass. The Deputy Commissioner also is strongly opposed to the proposal that hillmen should be required to take out a pass, and I fully concur with his views. In the first place it would be impossible to carry out the proposal, as far as the hillmen are concerned, without the aid of a very large and expensive establishment, and in the second it would be impolitic, for reasons already stated, to place such restrictions on the liberty of the hillmen. In addition I believe, as noticed by the Deputy Commissioner, that the local consumption of valuable timber by the hillmen is comparatively very insignificant."

74. As the Conservator of Forests, Bengal, is likely to visit the Chittagong Division during the coming cold season, and to see something of the forests, he will postpone expressing his final opinion on the subject until then. He will here only draw attention to one point. The Chittagong authorities appear to try and prevent the exhaustion of the forests by putting restrictions on timber-cutters. Now, it should be remembered that the forests

area is estimated at 5,670 square miles, and the highest annual outturn at 2,759 tons, or at the rate of about one ton for every two square miles—or, to put it still plainer, at the rate of one cubic foot of timber for every 25 acres of forest land. If such an outturn was likely to ruin the forests, then the sooner they are ruined the better, because they would not deserve existence. The real fact is that the annual export of timber at the present rate is quite irrelevant, the important point being that immense quantities of timber are destroyed every year within the Hill Tracts simply by *joom* cultivation; and the question whether reserves are to be formed or not, is synonymous with the one whether it is *possible or advisable* to prevent jooming or cultivation generally within certain well defined tracts. The Conservator, as mentioned above, will give his opinion on the subject after his visit to Chittagong, when the whole question might be reopened.

ASSAM DIVISION.

75. During the year under review eight tracts were selected for reserves, but they have not been gazetted as yet. The tracts declared reserves during the year are the following:—

I. The Kulsi plantation reserve.
II. The Baliparah reserve.
III. The Khaling Dooar reserve.

A further tract, the Nauduar reserve, has been approved of, but it could not be gazetted on account of the boundary between the Durrung district and the Akha Hills not having been fixed by the British Boundary Commissioner.

I.—*Kulsi Plantation Reserve.*

This reserve is situated in the Pantan mouzah, on the east bank of the Kulsi river, about 25 miles in a straight line south-west from Gowhatty.

(1.) *Area.*—

Sâl forest	= 2	square miles.
Area to be planted	= 3½	„ „
Total ...	= 5½	square miles = 3,520 acres.

(2.) *Boundaries.*—*West*, a line running from the boundary mound east of the village of Bahupur in a north-westerly direction to the southern extremity of the narrow chil running parallel with the river Kulsi from Bahupur to Jogibari, and thence, in a half-circle, east of the latter village, until it joins the Hati Khonda river north of Jogibari; thence along the right bank of the latter river up to the small feeder which connects it with the Andari chil; *north*, the small feeder which connects the Hati Khonda river with the Andari Chil, up to the cultivation of the Boglibari village and the southern boundary of this cultivation up to the Nia nuddy; *east*, the Nia nuddy from the paddy-fields of Boglibari to the paddy-fields of Balijuli; then a line round these fields and back to the Nia nuddy and up to the northern boundary of the cultivated lands of the Golia village; *south*, the northern boundary of the cultivated lands of Golia village from the Nia nuddy to the Kulsi river, to the boundary mound east of the Bahupur village.

(3.) *Topographical description.*—Low hills alternating with level and low lying pieces of ground, some of which contain pools of water.

(4.) *Soil.*—Sandy loam with vegetable mould on the hills and level ground, with granitic rock underlying it. Clay in the lower parts.

(5.) *Description of forest.*—The only tree prevailing in any quantity is sâl; there are here and there a few—

Sam	*Artocarpus chaplasha.*
Tun	*Cedrela toona,*

which are to be conserved.

(6.) *Timber Depôts.*—The depôt at Kukurmara, on the Kulsi, where the Assam trunk road crosses it.

(7.) *Timber markets.*—Goalpara, Bogribari, Serajgunge, and Dacca.

(8.) *Lines of export.*—Down the Kulsi to the Brahmaputra.

(9.) *Villages within the reserve.*—None.

(10.) *Rights of surrounding population.*—None.

(11.) *A map* of the reserve on a scale of two inches to the mile has been prepared by Mr. Aylmer.

(II.)—*Baliparah reserve.*

Situated in the Baliparah mouzah, on the western bank of the Baroli river, about 16 miles in a straight line north of Tezpore.

(1.) *Area*—

Mixed plain forest	..	..	50·30	square miles.
Lower hill forest	..	..	29·50	„ „
Sâl forest	..	..	0·90	„ „
Savannah forest	..	..	7·14	„ „
	Total	..	87·84	„ „

(2.) *Boundaries.*—*North*, the line fixed by the British Boundary Commissioner between the Akha Hills and British territory, from the Mansiri river to the Baroli river; *east*, the Baroli river, from the British boundary to the Meri village, and a survey line west of this village; *south*, a survey line running east and west from the Meri village to the Mansiri river; *west*, the Mansiri river, from the southern boundary to the British boundary.

(3.) *Topographical description.*—Partly lower hills and partly level ground.

(4.) *Soil.*—Alluvial clay and sand, with much vegetable mould on the level ground; a rich sandy loam or clay, with gravel underneath, on the higher ground.

(5.) *Description of forest.*—The better trees prevailing in the mixed plain forest are—

Ajhar	..	*Lagerstræmia Reginæ.*
Bola	..	*Marlea sp.*
Gomari	..	*Gmelina arborea.*
Poma	..	*Cedrela Toona.*
Koroi	..	*Albizzia odoratissima.*
Hingori	..	*Castanopsis rufescens.*
Makriah	..	*Schima Wallichii.*
Simul	..	*Bombax malabaricum.*
Jutili Duhong	..	*Altingia excelsa.*
Tualu	..	*Tetranthera monopetala.*
Roghu	..	*Nauclea cadamba.*

The better trees prevailing in the lower hill forests are the following:—

Sam	..	*Artocarpus chaplasha.*
Nahor	..	*Mesua ferrea.*
Jamu	..	*Eugenia mangifolia.*
Gunseroi	..	*Camphora glandulifera.*
Hingori	..	*Castanopsis rufescens.*
Uriam	..	*Bishofia Javanica.*
Tita sappa	..	*Michelia champaca.*

Besides these, there are rubber trees scattered through both this and the mixed plain forest, as nearly everywhere in the Durrung district, along the foot of the Himalayas. The sâl forest is on the whole very young and inferior, but for all that, on account of its position, very valuable, since it is the only sâl forest in the Durrung district, with the exception of a small patch still more inferior, about 30 acres in extent, and situated on the Mora Baroli river, seven miles from Tezpore. The forest owes its inferior condition to excessive and uncontrolled fellings in former years, and the constant fires, which overrun them annually. They are nearly pure, and there is no doubt that with care and attention they

will become very valuable for the district. The Savannah forest contains a sprinkling of the following trees:—

Ajhar	...	...	... *Lagerstrœmia Reginæ.*
Koroi	...	...	... *Albizzia odoratissimā.*
Gomari	...	...	... *Gmelina arborea.*
Simul	...	...	... *Bombax malabaricum.*
Udal	...	...	... *Sterculia villosa.*
Amluki	...	...	... *Emblica officinalis.*
Roghu	...	...	... *Nauclea cadamba.*

It was enclosed in the reserve with the view of raising sâl on it by natural reproduction, spreading of sâl-seed, and if necessary by planting.

(6.) *Timber depôt.*—Tezpore.

(7.) *Timber markets.*—Tezpore and other places on the Brahmaputra.

(8.) *Lines of export.*—Down the Baroli, which is fit for floating at all times of the year, to the Brahmaputra, also in the rains down the Mansiri and Sonai nuddies to the Brahmaputra. The Baroli joins the Brahmaputra about eight miles above Tezpore.

(9.) *Villages within the reserve.*—None.

(10.) *Rights of surrounding population.*—None.

(11.) A *map* of the reserve on a scale of two inches to the mile has been prepared by Mr. Fisher.

(12.) *Working plan.*—This is under preparation.

III.—*Khalingduar Reserve.*

The Khalingduar reserve is situated in the Khalingduar, and a small portion in the Bungomaduar, immediately at the foot of the Bhutan Hills, and between the Bhola nuddy on the east and the Nonai nuddy on the west, about 26 miles in a straight line north of Mangledai.

(1.) *Area.*—9·75 square miles.

(2.) *Boundaries.*—*North*, the line fixed by the British boundary Commissioner between the Bhutan Hills and British territory from the Nonai or Kulsi river to the Bhola nuddy; *east*, the Bhola nuddy from the British boundary to a boundary-mound marked A; *south*, a survey line running due west from the boundary-mound marked A on the Bhola nuddy to a boundary-mound marked B on the Nonai or Kulsi river; *west*, the Nonai or Kulsi river from the boundary mound marked B to the British boundary.

(3.) *Topographical description.*—Partly level ground and partly old river-beds.

(4.) *Soil.*—Alluvial with much vegetable mould; in the old river-beds sand and gravel.

(5.) *Description of forest.*—The forest on the level ground is lower hill forest with a considerable number of rubber-trees scattered over it, which latter are of magnificent growth. The old river-bed is stocked with khair.

The better kinds of timber trees are the following:—

Sam	...	...	... *Artocarpus chaplasha.*
Nahor	...	...	... *Mesua ferrea.*
Ajhar	...	...	... *Lagerstræmia Reginæ.*
Poma	...	...	... *Cedrela toona.*
Gunseroi	...	...	... *Camphora glandulifera.*
Titasappa	...	...	... *Michelia champaca.*
Parelli	...	...	... *Bignonia chelonoides.*
Roghu	...	...	... *Nauclea cadamba.*
Hulluk	...	...	... *Terminalia paniculata.*
Khair	...	...	... *Acacia catechu.*

The forest is well stocked with timber, and will shortly be the only source whence timber can be supplied to the Mangledai sub-district, where the want of wood for burning, and charcoal, is already being felt.

(6.) *Timber depôts.*—None at present, hereafter one might be established at Bengbari.

(7.) *Timber markets.*—The Mangledai sub-district.
(8.) *Lines of export.*—Down the Nonai nuddy to the Brahmaputra.
(9.) *Villages within the forest.*—None.
(10.) *Rights of surrounding population.*—None.
(11.) A *map* on the scale of two inches to the mile has been prepared.

76. During the year valuation surveys were made in the Deboka and Kolahat reserves by Mr. Condon, from which the following contents of these forests have been calculated:—

Deboka reserve.—Area of sâl forest = 355 acres.

	Sâl.	Jamu.	Sonaru.	Gomari.	Khair.	Poma.	Sam.
Seedlings	15,930	4,748	334	150	17	30	47
Saplings	2,338	928	71	20	10	37	3
Young trees	163	58	10	17	.....	6	.....
Trees	13	.....	3	3	.....	13	.....
Old trees	.....	.....	.....	.....	.....	.....	.....
Total ...	18,444	5,734	418	190	27	86	50

Kolahat reserve.—Area of sâl forest = 1,465 acres.

	Sâl.	Jamu.	Sonaru.	Ajhar.	Khair.	Poma.
Seedlings	24,777	15,204	1,859	974	401	210
Saplings	2,688	4,121	212	312	471	25
Young trees	859	31	6	31	133	6
Trees	248	.....	.....	573	19	6
Old trees	.....	.....	.....	.....	.....	.....
Total ...	28,572	19,356	2,077	1,890	1,024	247

These figures show that both forests have been overworked, and what they require is rest for some time to come.

77. A very valuable piece of work has been done by Mr. Fisher in examining the concentric rings of 40 sâl trees. This is what was much wanted, and the collection of similar data will be proceeded with year after year. In the meantime it will be useful to see what results Mr. Fisher's countings, noted in Appendix VIII, give. The system of counting has been to ascertain the number of concentric rings corresponding with a girth of 18 inches, 3 feet, 4 feet 6 inches, and 6 feet. Countings have been possible in all the 40 logs up to a girth of 3 feet, in 25 logs up to 4 feet 6 inches, and only in 5 logs up to 6 feet. The trees were taken from the Pantan reserve in the Kamroop district, the locality being a low hill with level ground round its foot. Twenty-two of the trees grew on the hill, and eighteen in the level portion. Although the countings do not justify a final conclusion, still they seem to point to a few remarkable facts which it is worth while noticing here. The results stand as follow:—

	Number of concentric rings corresponding with a girth of—			
	1′ 6″	3′	4′ 6″	6′
On the hill	30	56	82	115
In the plain	32	65	96	126
Average	30	60	85	117

In the first instance, the growth during the younger years of the sâl tree is comparatively slow, whereas in the case of most Indian trees the reverse is the case. The reason for this is, the Conservator thinks, to be found in the fact

that young sâl trees in these forests suffer more from jungle fires than old trees. And again the growth on level land is slower than that on the hill sides. This, too, is most likely caused by jungle fires in the plains being much heavier than on the hills. In short, if the above data are correct, we find borne out by actual figures that the influence of jungle fires retards the growth of the trees considerably. Until the data have been further augmented, it may be assumed that the rate of growth of sâl in the Kamroop reserves is as follows:—

Girth.		Age in years.
1′6″	=	30
3′	=	60
4′6″	=	90
6′	=	120

The keeping out of fires would of course lead to a different rate of growth.

78. The demarcation of the Pantan, Borduar, and Kulsi plantation reserves in the Kamroop district, and all the reserves in the Nowgong and Durrung districts, has been completed during the year.

SECTION III.—PROTECTION AND IMPROVEMENT OF FORESTS.

79. As long as the Department in these provinces is occupied with the general inspection of the country with the view of setting aside certain areas as reserved forests, it is but natural that not much progress can be made in the work, which has to be reported on under this section. However a beginning has been made, and after another year or two measures for the protection and improvement of the forests in Cooch Behar, Assam, and Palamow, will be in full working order.

ESTABLISHMENTS.

80. During the year the Conservator submitted separate reports showing the total insufficiency of the protective establishments sanctioned for the Cooch Behar and Assam Divisions, and asking for an increase, besides an entirely new scale for Palamow. The proposals did not receive the sanction of the Government of India in the first instance, but subsequently the Financial Department sanctioned the budget provision for 1873-74, based on the proposed scale of establishment, as far as Cooch Behar and Palamow are concerned. The Department of Agriculture, Revenue and Commerce, hereupon inquired whether the changes proposed by the Conservator might not be carried out under the circumstances, and the Government of Bengal sanctioned, as a special case, the employment of an enlarged establishment according to the Conservator's discretion, and within budget limits, for the first six months of 1873-74, under the condition that final proposals will be submitted before the end of September 1874. A new scale of subordinate establishment is now under consideration, and it is hoped will be sanctioned before the end of the current financial year.

81. With the few watchers formerly sanctioned for Cooch Behar, it was quite impossible to protect the forests, and a very large amount of mischief was done; but since the increased establishment has been employed, it has been possible to apprehend the evil-doers, and several heavy punishments have been awarded by the regular courts for theft of timber and offering bribes to Government officials. These will be reported on in next year's report.

82. For *Palamow* an establishment of—

1	Ranger	on Rs. 100 per month	...	...	Rs. 100
1	Peon	„ „ 6 „ „	...	...	„ 6
14	Watchers	„ „ 6 „ „	...	...	„ 84
			Total per month ...		Rs. 190

has been allowed, and the forests (178 square miles) will be taken under management during the coming cold season.

83. The establishments for the *Assam* forests are still under discussion, and in *Chittagong* no changes have been made during the year.

BREACH OF FOREST RULES.

COOCH BEHAR DIVISION.

84. Five prosecutions have been instituted during the year, and four convictions obtained. Four were cases of petty theft; the fifth was, however, an important case, namely the cutting and partly removing of 100 sâl trees from the Sukna forest. The perpetrator is one Nakul Sing, a native of Nepal, who worked as a timber contractor for the Public Works Department. It appears that the Executive Engineer of Darjeeling district entered into a contract with Nakul Sing for the delivery of the timber at a rate below the usual market price. Nakul Sing proceeded to the Government forest, cut 100 sâl trees up into beams, which he began to transport from the Government forest, first into some adjoining private forest, and from the latter to the Silligori Darjeeling cart road, thus making it appear as if the timber came from the private forest. After he had taken away and delivered to the Public Works Department some 30 pieces, the theft was discovered by Mr. Gamble, and about 70 fine beams seized in the forest. The matter was at once put into the hands of the police, but before Nakul Sing could be arrested he had decamped into Nepal. The police investigated the case at some length, but nothing has come of it; the Conservator being informed that the inspector of police was suddenly transferred to famine work, and his successor failed to take up the threads of the investigation. The forester in charge of the Sukna range was on leave while the theft took place, and there is some suspicion that the man who officiated for him temporarily, as well as the watcher, took bribes; but nothing could be proved against the two men. In a pecuniary point of view the Department has not suffered a loss, since the converted timber seized has been sold for more than the standing trees would have been sold for at the ruling rates.

CHITTAGONG DIVISION.

85. The Commissioner writes as follows:—

"The following remarks made by the Assistant Conservator are also worthy of notice, and are here extracted in full. Proposals are now under consideration to strengthen the toll collections and prevent parties from illicitly and forcibly taking down forest produce without paying the Government toll. I consider it would be advisable, where persons are caught taking forest produce past a toll-station illicitly, to make the penalty double payment of tolls.

"I have asked the Assistant Conservator, in consultation with the Deputy Commissioner, to draw up a set of rules on the subject, such as contemplated by the law, for approval. It is absolutely necessary that some rules should now be drawn up and promulgated under clause 2, section 4 of the Forest Act, as much inconvenience and difficulty has been already experienced owing to the frequent evasions of tolls which have lately occurred."

ASSAM DIVISION.

86. In the reserves of this division 7 cases, in which 14 persons were concerned, were brought before Magistrates, and 2 convictions obtained. On the whole there is little trespass in the Assam reserves.

FIRE SUPPRESSION.

87. No one, who has not seen the grass and the jungle fires in the north-eastern forests of Bengal, especially in the terai, has an idea of the height and density of the former, and of the violence of the latter. Except immediately after the jungle fires have cleared the ground, it is impossible to enter the sâl forest without an elephant who forces a path through the

dense mass of grass and jungle. Even then it is frequently impossible to see the forest, because the grass reaches such an immense height. To keep out fires from such forests is no small undertaking, and similar operations in northern and central India appear to be mere child's play compared with it. Mr. Baden Powell, late Officiating Inspector-General of Forests, who has seen something of similar operations in other parts of India, was present when an attempt was made to burn a fire-path round the Sivok sâl forest in the Darjeeling terai, and great was his surprise and astonishment at the exhibition. It is not to be wondered at, then, if our first efforts of protecting these forests against fire should not be very successful. However in a few instances we have succeeded, and we trust to succeed more and more every year.

COOCH BEHAR DIVISION.

88. *The Bamunpokri plantation* has been successfully protected by a fire-path of upwards of 150 feet broad.

89. An attempt was made to burn a 300-feet fire-path on the south boundary, where the fires come from, of the *Sivok sâl forest*, covering an area of 1,554 acres, but the second day a sudden gust of wind carried the fire over the path, which had been cleared on the side of the forest, burning a portion of the forest. Subsequently other fires passed the fire-paths, and the final result is that almost the whole forest has been burnt.

90. On the other hand the *Muraghat sâl forest*, comprising an area of 12 square miles, has been successfully protected by a path, with the exception of a small portion of the Savannah forest. This reserve is bounded on the east and west by water-courses, so that only on the north and south paths of about 4 miles in length had to be cleared. Mr. Johnston, who conducted the work, reports his operations in the following words:—

91. "On the morning of the 13th January I proceeded to the Nonai river, the western boundary, and commenced preparing the southern fire-path in the following manner. By means of triangles constructed of bamboos or any other light material, the coolies pressed down the jungle, thus forming an intervening space of about 30 to 40 feet in width between the jungle intended to remain standing and that intended to be fired. Besides this 30 to 40 feet intervening space, I ordered a space 6 feet wide and about 10 feet distant from the jungle intended to remain standing, to be cut and cleared of every description of jungle and inflammable matter, and had this 6 feet space even carefully swept, as it was the ground fire I feared would be the most dangerous. I was thus engaged during the 13th and 14th, when I reached the Ghairkhuta, the eastern boundary.

92. "The 16th I commenced firing the jungle south of this fire-path. I got to work about 10 A.M., that is as soon as the jungle allowed of being fired, and worked from the Nonai river in an eastwardly direction towards the other or eastern boundary. The wind was blowing nearly due south, so I was obliged to be very cautious. Having seen that the coolies were all supplied with thickly foliaged branches, for the purpose of beating out the fire when necessary, I commenced firing—not immediately the standing jungle, but the jungle which the men had pressed down immediately south of the 6 feet cleared space. All went on successfully until about 1 P.M., when the wind increased with a sudden gust, and blowing as it was from the south, it caused the ground fire to cross the 6 feet cleared space, thus igniting the jungle intended to remain standing and entering the forest about 200 yards at the deepest place.

93. "The 17th I went to work between the Garati and Ghairkhuta rivers, and first of all increased the space intervening to 70 feet, besides having the 6 feet wide space carefully cleaned and swept. After firing the jungle, all seemed to be going on well until one of the coolies, who was left behind to give the alarm if needed, was heard summoning hands to his assistance, and on proceeding with some men found that the head-fire had crossed. However, by means of the men we managed to beat it out before it had gone more than 100 or 150 feet into the forest, and before the fire had reached any of the trees.

Thus, notwithstanding a 70 feet intervening space, the fire was carried over, about one-fourth of a mile distant from where the main body of men were working; and if it had not been that the jungle where the fire did cross was somewhat green, it is hard to say how far the same might have gone.

94. "The wind was, and is always during the day, from the south; whereas at night immediately after sunset it changes and comes down from the north. This is invariably the rule, and is a most serious obstacle to any one making fire-paths. However all went on well after that, although I was at times rather uneasy how it would end, having to work with such a contrary wind. After firing this space I, on account of the contrary wind, was obliged to force the fire by sending men some distance into the jungle with fire-brands, but was obliged to be very much on the alert, as the flames in places seemed to threaten to cross my path. I then got the southern fire-path completed, and moved camp on the 19th four miles further north for the purpose of constructing the northern fire-path. Here I went to work in the same way as I did at the southern fire-path, except that I made the intervening space only 40 feet wide, having a much more favourable wind to work with, notwithstanding which, the fire did cross my path, the wind suddenly shifting; but by the aid of the coolies I was able to beat it out before it had got further than 10 yards. Up here, north, I found that jungle-fires, which seemed to have taken place about 16 days before my operations, judging from the length of the new growth of grass-jungle, had already crossed the intended northern boundary; but on inspection I found that the course taken by the fire had not done any very considerable mischief to the sâl forest. I finished the northern fire-path, without anything else worthy of note occurring, on the 23rd."

95. The jungle-fires have this year been exceedingly strong and fierce all over the division, owing to the early stoppage of the rains and the consequent extreme dryness of the grass. They began in December, or nearly two months before the usual time.

ASSAM DIVISION.

96. Attempts were made to protect the Pantan, Borduar, and Matiakar sâl reserves, comprising 12, 23, and $3\frac{1}{2}$ square miles respectively, and situated in the Kamroop district, against fire, by clearing paths and burning the grass all round where they were not naturally protected by water-courses. Extra watchers were temporarily employed; but about the middle of March fire was lighted by villagers near the northern boundary of the Borduar reserve, which was carried into the reserve and burnt about half of the Borduar and Matiakar reserves in spite of the endeavours made by Mr. Aylmer to extinguish the fire. Of the Pantan reserve only a very small portion was burnt.

97. In the Nowgong district similar measures were taken, and fires partly kept out of the Kolahat reserve, area $= 7\frac{1}{2}$ square miles; but the Deboka reserve, area $= 3\frac{1}{4}$ square miles, was set on fire maliciously and burnt. The perpetrators were apprehended, prosecuted, and sentenced to imprisonment.

98. In the Durrung district the Balipara reserve, area 70 square miles, was set on fire by shikaries, who were apprehended and prosecuted; but the case was dismissed because an hour had elapsed before the forester and watchers got up to the men. Although the men were found with lighted sticks in their hands, Mr. Mann reports, the Magistrate did not consider this conclusive proof that they had set fire to the forest.

99. The other reserves in Assam are evergreen forests, and they are not overrun by jungle-fires.

SECTION IV.—PLANTATIONS.

100. To report progress on the plantation operations undertaken in Bengal is not altogether a satisfactory occupation. By the orders of Government our chief efforts have up to date been directed to the growing of teak beyond its natural northern limit in a climate doubtfully damp and cold, and to the propagation of India-rubber in a manner different from that indicated by Nature. If to this is added that we have on our hands some plantations

spoilt in former years, it may readily be understood why much money is being spent and comparatively poor results obtained. In last year's report a detailed description of all the plantations has been given, and the Conservator limits his remarks therefore to what has been done during the year, and to recording the experience gained during that time. The area planted on the 1st April 1873 amounted to 622 acres, and during the year 301·5 acres have been added. According to species of trees there are—

		Acres.
Plantations of	temperate trees	450
„ „	conifers	42
„ „	teak	190½
„ „	teak, toon, and sissu	11
„ „	sissu	10
„ „	India-rubber	215
„ „	fruit-trees	5
	Total ..	923½

COOCH BEHAR DIVISION.

101. *Rangbul plantation.*—This plantation of temperate trees is situated half a mile from Jore bungalow, and in consequence it is very much exposed to damage by cattle. Moreover a considerable number of cattle, kept by some people living in the old Senchal barracks, are constantly straying into the plantation. Efforts were made to keep the cattle out, but they failed; and towards the end of the year arrangements had to be made to put a fence round the plantation of 450 acres, which has been completed since at a considerable cost. The effects of this measure are visible already, and the oaks and magnolias have taken a fresh start. The plantation is now fairly covered with small brushwood, and with the view of increasing the number of valuable trees, several thousands of walnut-seedlings have been raised in a nursery, which will be planted out during the year 1874-75. Arrangements have also been made to raise large quantities of champ (*Michelia excelsa*), and lal champ (*Magnolia Campbellii*), in order to cover the ground cleared in former years in the Rangbul range. The expenditure during the year amounted to Rs. 209-0-9.

102. *The Dhobee Jhora pine-plantation* has been protected during the year, nothing else being required at present.

103. *Bamunpokree plantation—Teak and Toon.*—During the year this plantation has been surveyed by Mr. Gamble, and a plantation record, according to the instructions published with last year's report, prepared; parts I and II of which, with the map of the reserve, will be found in appendix IX.

The plantation reserve comprises an area of 1,367 acres, of which 1,300 are fit for planting. It has been divided into five blocks, according to the peculiarities of the ground. Blocks I, II, and III, comprising an area of 741 acres, are to be planted with teak and toon, and blocks IV and V, comprising 626 acres, are to be interplanted with toon only. On the 1st April 1873 the following areas were under plant:—

Block I,	compartment 1,	sub-compartment	*a* = 8¾	acres =	teak of 1868 and 1871.
„ I	„ 1,	„	*b* = 33½	„ =	„ „ 1872.
„ I	„ 2,	„	*a* = 5¾	„ =	„ „ „
„ I	„ 3,	„	*a* = 10	„ =	„ „ „
„ II	„ 1,	„	*a* = 11	„ =	teak, toon, and sissu of 1871.
	Total	...	69		

During the year 1873-74 the following areas were added:—

Block I,	compartment 2,	sub-compartment	*b* = 16¼	acres =	teak of 1873.
„ III	„ 1,	„	*a* = 6	„ =	„ „ „
	Total	...	22		
	Grand Total	...	91		

The area III 1 *a* was planted by special orders of the Government of Bengal.

The 1868 and 1871 plantations were fairly stocked, and nothing has been done in them during the year except protecting them against fire. Some of the largest trees in the 1868 plantation lost their top shoots, but up to date nothing decided can be said as to the ultimate effect of this phenomenon. The 1872 plantation was only about half stocked with sickly and small teak-seedlings.

104. On the 2nd May 1873 the whole plantation was transferred from the Cinchona to the Forest Department. Mr. Gamble, the officer in charge, in the first instance filled up the vacancies in the 1872 plantation by planting 12,360 nursery teak-seedlings into it. In accordance with instructions received from the Conservator of Forests he made an extension adjoining the 1872 plantation by sowing teak in spots four feet apart either way, but only in every alternate seed-hole; it being intended to plant the intermediate spots with toon-seedlings. Nurseries of the last-mentioned species were laid out in addition to auxiliary nurseries of teak. While thus employed, and while the Conservator was absent on duty in Assam, the Bengal Government, on suggestions made by Dr. Henderson, then Officiating Superintendent, Botanical Gardens, Calcutta, issued orders direct to Mr. Gamble to commence a second plot of teak-plantation on the hillside, and to establish 20 acres of rubber-plantation on the Bamunpokree spur. The planting season was then far advanced; however, Mr. Gamble acted on these direct orders, which of course upset the arrangements made by the Conservator before his departure for Assam. In the desire to carry out the Government orders and establish the new plots of the plantation, the old plantation of 1872 was neglected for want of labour, the grass in it growing up to a fearful height. When the Conservator became aware of all this towards the end of June, he immediately sent orders first to take care of the old plantation before establishing extensions. Additional labour was not to be had at that time of the year, and the result was that the growth of grass and jungle in both the old and new plots became quite uncontrollable. To this should be added the scanty rainfall of the year, which prevented most of the teak-seeds from germinating, and the result can easily be imagined. The Conservator examined the plantation on the 18th October 1873, and found to his dismay that almost all plants in the 1872 and 1873 plantations had been smothered by grass and many killed. The 1872 plantation was fairly stocked, but most of the seedlings looked very miserable; in the 1873 plots there were hardly any seedlings at all, but a number of transplants were doing fairly well, though smothered by the grass. The attempts to raise toon were limited to a number of seedlings in the nurseries, and a few in the 1873 plantations. Thus we have another illustration showing the effects of a change of programme in the middle of the planting season.

105. (2) *Mahogany.*—Fifty mahogany-plants, received from the Superintendent, Botanical Gardens, Calcutta, and planted out amongst the teak of 1872, have grown well, indeed they look very promising up to date.

106. (3) *Baobab.*—A few baobab were also planted, but most of them have died again, and those remaining have made very little progress.

107. (4) *Rubber-plantation.*—Dr. Henderson submitted early in May 1873 proposals for the formation of rubber-plantations in Bengal, upon which the Government of Bengal ordered the Conservator of Forests to carry out Dr. Henderson's suggestions, and to establish experimental plantations, sending these orders at the same time direct to Mr. Gamble. This officer established 12 acres of plantation according to Dr. Henderson's system, and the result is a total failure. The plot of ground selected is situated on the Bamunpokree spur, in the terai, at an elevation of about 1,000 feet above the sea. The soil is very rich and fairly covered with high timber forest, giving a moderate shade. The rubber-cuttings were about one foot long, of different diameter, and planted about two-thirds of their length into the ground, ten in each tally, the latter being 30 feet apart each way, or about 48 per acre. The total number of cuttings planted amounted to 5,760. The planting was commenced on the 27th June. At first the cuttings struck pretty freely, so that 1,130 had taken root and sent

out leaves on the 26th August; but in September, when the rains ceased, the cuttings began to show signs of dying off again. On the 20th November only 339 were found alive, and on the first April 1874 only six remained.

108. It is difficult to explain this failure. The shade overhead can hardly have been the cause, because the plantation at the Kulshi, in Assam, failed in the same way, although there lines had been cleared so as to leave only side shade. Mr. Gamble further thinks that want of moisture has nothing to do with it, as a number of cuttings failed although planted in almost marshy ground.

Mr. Mann, in charge of the Assam forests, is of opinion that the cuttings had not sufficient time to establish themselves before the rains ceased, and he proposes to plant the cuttings in February instead of May or June, and with this view the Conservator agrees.

109. The expenditure during the year stands as follows, irrespective of the cost of the rubber-plantation experiment, the area of which has not been brought on the books:—

	Rs.	A.	P.
Expenditure belonging to the year	4,858	1	9
„ „ to 1872-73	1,143	13	9
Total ..	6,001	15	6

110. The Conservator of Forests, in considering the steps to be taken in this plantation in 1874-75, resolved upon not attempting an extension, but arranged for the proper filling up of the 91 acres under cultivation. Accordingly early in 1874 extensive nurseries of toon and teak were established, the vacancies in the 1872 plantation filled up with toon chiefly, and those in the 1873 plots with alternately teak and toon. This work will be completed by the end of August 1874. At the same time the plantation has been kept clear of grass and jungle throughout the growing season, which has had a very beneficial result upon the plants. The cost of clearing grass however, is very heavy, its growth being so extremely rapid. In 1875 we shall then be able to make a new start by planting an additional piece of ground with teak and toon mixed.

111. *Mahanuddy and Gulma plantation.*—As indicated in last year's report, these two small experimental rubber-plantations have turned out failures, and nothing need be said about them, except that their area has been struck out of the statement of plantation area.

112. The same may be said of the *Ramshai Hat* experimental teak-plantation, though a few plants are still growing.

113. Regarding the *Fallacotta* experimental teak-plantation, Mr. Gamble reports as follows:—

"This plantation, which the Conservator has already stated to be utterly unsuited for the growth of teak, was visited by myself in March 1874. The trees were nearly all attacked with rot at the base of the stem, many of them having actually fallen down;—in fact, the whole appearance of the plantation was very bad. A few sissu-trees planted with teak seemed to grow pretty well, but even they could hardly be expected to prosper in a country so utterly devoid of trees of any kind as that round Fallacotta." This plantation may be kept on record for the present.

114. A few *deodar* seeds obtained by Mr. Gamble from the North-Western Provinces germinated freely, but most of the seedlings have died again.

115. Two batches of *the sweet chestnut*, usually called the Spanish chestnut, were received from the Secretary of State for India. About half of these were packed in paper and half in coal-dust. The seeds were sown partly at Rangirum, partly at Moungpu, and a few at Bamunpokree. Of those packed up in paper, only 18 germinated; and of those sent in coal-dust, 87. The chestnuts were sent to the Conservator at Calcutta, who had no previous information whatever of their coming. Unfortunately they arrived when the Conservator was absent on tour, and in this way some delay arose. Had the chestnuts been sent straight from Europe to the Assistant Conservator at Darjeeling, I have no doubt some thousands of seedlings might have been obtained, as many had germinated

on the way out, and of course died again. Dr. King, the Superintendent, Botanical Gardens, Calcutta, is of opinion that sweet chestnuts should be obtained from Italy, so that they may be packed in a dry climate. With this view the Conservator agrees; but he thinks it is equally important that previous notice be given of the intended day of despatch, and that the seeds be sent straight to the officer who is to sow them.

CHITTAGONG DIVISION.

116. The Commissioner writes as follows:—"The sites on which plantations of teak have been commenced are Pahartulli, near the station of Chittagong; Sitapahar; and Holingamara, in the Hill Tracts, on the river Kurnafoolie. A few seeds were also sown near Kassalong, but these did not germinate. Plantations have not been continued on the Pahartulli site owing to the damage caused by cattle breaking through the fencing. The surrounding villagers," the Assistant Conservator reports, "made a point of doing as much mischief as possible at night to the young plants, which they looked upon as likely to grow up and shut out their pasturage.

117. "At Sitapahar the area taken up is about 11 acres. Of this area ten acres had been planted up to the close of the year under report, at an aggregate cost of Rs. 629-12-6, or nearly Rs. 63 per acre. At the end of 1872-73, 2,130 plants were alive at Sitapahar, and 8,900 plants were put out during 1873-74, giving a total of 11,030 plants in the ten acres.

118. "At Holingamara 100 acres were prepared for the reception of teak-seedlings in 1872-73, but owing to a reduction of the original budget estimate of Rs. 6,000 for plantations to Rs. 1,000, only 58,710 seedlings were planted out during the year over an area of about 48 acres. The expenses incurred on this plantation amounted to Rs. 1,718-15-7, or to nearly Rs. 35 per acre.

119. "The total expenditure during the year on the Sitapahar and Holingamara plantations amounted to Rs. 1,945-14-4, whilst the number of plants put out last season aggregated 67,610.

"It has not been possible," the Assistant Conservator states, "to count the number standing lately, as the jungle has been allowed to spring up to afford shelter during the hot months."

120. "The following remarks regarding the mode of plantation, and the appearance of the plants have been extracted from the Assistant Conservator's report:—"The plan of forming several nurseries conveniently apart and sowing the seed broadcast was followed; and as soon as the plants were about four inches high, they were transplanted and placed out six feet apart.

"Ten maunds of seeds were imported from Burmah; and judging from the profuse manner in which they germinated, their quality must have been exceptionally good.

"The greatest planting difficulties encountered last season were the short rainfall and scarcity of labour. The last was in a great measure caused by the reputed unhealthy nature of the Hill Tracts during the rains, and the sick-list all through supported the bad reputation of the place, at one time there being as many as 35 sick out of 50 men.

121. "In the Sitapahar plantation, I regret to say, several trees have been attacked by an insect called by the natives "korath." It has generally entered the tree at the lowest node and worked its way into the heart, making the node increase in size. About a dozen trees have fallen from this cause, and I am at a loss to know how to treat the subject or account for the existence of the insect.

"The appearance of the plants on the whole, including even those attacked by insects, is good. The injured ones continue verdant and outwardly healthy up to the time they fall; the only symptom of disease is the swelling at the lower node, where attacked. The plants of 1871-72 now stand on an average from 20 to 25 feet; those of 1872-73, from 10 to 16 feet; and last year's are now just starting into growth after their dormant spell, and stand about 1 to 1½ feet high.

122. " From the past three years' experience, I have found that young teak thrives best on high flat or undulating land, and in a sandy loam. Unfortunately most of the river frontage of this description on the Kurnafoolee has been allotted for plough-cultivation, and we shall therefore have to content ourselves with whatever land is available bordering on the river. The results may be less satisfactory ; but I think formation of artificial forests should be confined to land not required for cereal crops, and that it is preferable to raise one tree on worthless soil than ten on good, even though the cost of one should equal that of the ten.

123. " With last season's plants a crop of paddy and cotton was put in on a small scale, more to test, for the benefit of the hill men, whether any injury from it would result either to the teak or the crop ; the object of this experiment being an attempt to obtain the co-operation of the joomeahs hereafter to put in teak-seedlings with their jooms, which, when abandoned by them for other jooms, would leave a number of teak-plants on them. These would have to be kept clean by ourselves the second year, and then allowed to get on by themselves.

124. "On the proposal of sowing young teak-plants in deserted jooms, the Deputy Commissioner states, that the 'joomeahs will thereby be debarred from cultivating that particular land again. It is at present the custom to allow the land to remain fallow for a period, which varies from three to ten years; then to cut down and burn the jungle which has grown upon it in the meantime, and cultivate it for one season. Some spots are more valuable than others on account of their accessibility or fertility ; and it will be found that what is most suitable for teak-forest is also most suitable for jooming. I do not wish to make too much,' the Deputy Commissioner adds, 'of this objection, but I advance it because I think there is a remedy. Numbers of joomeahs are now becoming plough-cultivators; but till their land is cleared sufficiently to afford a crop which will give them food for the whole year, they are obliged to cut jooms of greater or less extent. There can be no objection whatever to utilizing such jooms, and the owners are exactly the class over whom we have the most direct authority.

125. " ' As regards the lands taken for plantations, I have to note that my predecessor has already pointed out to the Assistant Conservator that it is not desirable, looking to the probable future extension of plough-cultivation in the plains of the Hill Tracts, to occupy the richest and best drained valleys with young teak-plantations, however favourable such lands may be for them ; but that broken and hilly ground, not likely to be required for tea or cotton should be selected, provided always that it is within easy reach of good water-carriage.

126. " ' During the past year my predecessor, Mr. Hankey, procured some mahogany-seedlings from the Superintendent of the Botanical Gardens, Calcutta, and sent 25 of them to the Assistant Conservator, who, as it will appear from the following extract from his report, was not very successful with them. A futher supply has been obtained from the Botanical Gardens, Calcutta, since the close of the year, and has been sent to the Assistant Conservator for further experiment. There are, I observe, several fine mahogany trees standing in this station, and they appear to flourish here as well as they do at Calcutta.

127. " 'Regarding the mahogany-seedlings above referred to, the Assistant Conservator writes thus:—During the year twenty-five mahogany-seedlings were made over to me in a small brandy-case, and it immediately struck me that with three inches of soil to provide nourishment to seedlings about 18 inches in height, there could be very little chance of removing the plants out of the box and fixing them into the ground without losing most, if not all. To give them a chance, however, I at once proceeded to place a larger box filled with the most attractive leaf mould under the box in which the plants were, and then very carefully removed the bottom of the seedling-box; but with all the care and attention I could bestow, most of the plants at once began to droop and die away, and only eight survived this ordeal. The bottom of the brandy-case

showed that the tap-roots had regularly furrowed it, and subsequently when I put out the surviving seedlings I found, on examining the dead plants, that they had tap-roots quite as long as their stems and contorted into every imaginable shape and form, whilst they scarcely possessed any lateral roots. Two of the seedlings have been planted at the Holingamara teak-plantation; they appear very healthy and stand about three feet high: six were planted at Rangamutti, of which two appear to have died, and the remainder are thriving very well, the smallest being about two feet, and the highest four feet.

128. "The Assistant Conservator also reports that he procured a seedling of *ficus elastica* or caoutchouc-tree, and a few cuttings from Demagiri in the Hill Tracts, and planted the seedling at Holingamara under the shade of bamboos with grass thatching. The plant is expected to thrive, but the cuttings are reported not to have taken root owing to adverse weather.

129. "'Before quitting the subject of plantations, it may be mentioned that, as a set-off to the expenditure of Rs. 1,945-14-4 on the plantations during the year, Rs. 134-2-6 were realized by the sale of 228 maunds of paddy, 6 arees 5 seers of teel-seed, and 11 maunds 16 seers of cotton, being the produce of the paddy, teel, and cotton-seed put in with the teak-plants, as mentioned above in paragraph 32.'"

ASSAM DIVISION.

TIMBER-PLANTATION.

130. *The Kulsi plantation* consisted on the 1st April 1873 of eight acres of teak; during the year 25 acres of teak and 10 acres of sissu have been added: so that the total area stands now at 43 acres under plant.

131. *The teak-plantation of* 1872-73 has been kept clear of grass and jungle during the year at a cost of Rs. 124-8-6, or at the rate of Rs. 15-9 per acre. The growth of the young trees has been vigorous. When examined in February 1874, the seedlings had reached the following size:—

Average height	6·6 feet.
Average girth	3·6 inches.

Mr. Mann reports, however, that a borer has been observed during the rains of 1873. It attacks the young trees about a year old near the base of the stem, and after eating the wood immediately under the bark, makes its way into the pith and causes a swelling in the bark on the place attacked. The leaves of the plants attacked become limp and yellow, and the seedling eventually dies off above the place attacked. In this way about 21 per cent. of the teak-seedlings at Kulsi have been attacked in 1873. However, after having been cut off just above the ground, they sent out vigorous shoots; so that on the whole but few vacancies have been caused. During the cold weather of 1873-74 the borer disappeared entirely, but it has to be seen whether it will return this year or not.

132. *The extension of teak* (= 25 *acres*) was commenced in April 1873. By the end of June the clearance had been completed, the planting spots prepared, and the seed sown at stakes, some at six feet by six feet, some at six feet by three feet, and some at four feet by four feet, four seeds being put down at each stake. The seed sown was chiefly procured from Burmah; but some Assam seed had also been collected, which turned out a failure, it having probably been gathered before it was ripe. It was intended to have three acres planted with teak and toon alternately; but as the toon-seed did not germinate, the whole area was planted with teak only. On account of the lateness of the season when this year's extension was commenced, some of the land was not hoed before the seed was put down, and the consequence was that the subsequent weeding and hoeing became unusually expensive and troublesome. Up to the end of August the vacancies were filled up with seedlings; and after these had all been used, the remainder were filled up with seed, some of which did not germinate until the spring of 1874.

The general condition of the plantation is satisfactory. From countings made in February 1874, the following percentage of vacancies has been calculated:—

Average number of plants thriving	83 per cent.
„ „ „ vacancies	17 „
Total ...	100

The expenditure of the extension amounts to Rs. 1,536-9-6, or Rs. 61-7 per acre, exclusive of cost of establishment, tools, buildings, roads, and boundary-mounds. The total expenditure on the Kulsi teak-plantation during the year amounts to Rs. 2,196-7-11.

133. *The sissu plantation.*—At the end of June 1873 ten acres of land situated on the left bank of the Kulsi, outside the reserve, were cleared. The land is particularly well-suited for sissu, it consisting of sandy alluvial soil deposited by the Kulsi. The sissu was sown in nurseries in May 1873, and transplanted six feet by six feet on planting spots prepared like those for teak—that is to say, by taking out about one cubic foot of soil, breaking it up and replacing it. The early cessation of the rains caused some of the seedlings to die, but on the whole the experiment is fairly successful. On the 19th February Mr. Mann found on the average—

Plants alive	70 per cent.
„ failure	30 „
Total ...	100

The seedlings look very healthy, and vary in height from one to two and a half feet. The total expenditure on sissu during the year amounted to Rs. 481-7-8, or Rs. 48-2 per acre.

134. *Makum teak-plantation.*—This plantation comprised on the 1st April 1873 the following area:—

Teak of 1869	1 acre.
„ „ 1871	1 „
„ „ 1872	2 „
Total ...	4 acres.

During the year 1873-74 seven acres were added, so that at the end of that year the total area amounted to eleven acres. Mr. Mann examined the plantation in January 1874, and reports on its condition as follows:—

Teak of 1869—

Average height per tree	27 feet.
„ girth „ „	12·3 inches.

The area is well stocked, the growth vigorous, but there is still the tendency to send out strong side branches instead of top shoots. A few have been attacked by the borer.

Teak of 1871.—Average height per tree—14 feet; area fairly covered; growth vigorous.

Teak of 1872—

Plants alive in per cent.	40
Failure	60
Total ...	100
Average height per tree	5·7 feet.

Teak of 1873.—The sowing of the seed was commenced on the 23rd of June and continued to the end of August. An auxiliary nursery was also established. Mr. Mann found the plantation in January 1874 in the following condition—

Plants alive in per cent.	...	35
Failure	...	65
Total	...	100

135. The Conservator of Forests visited the Makum plantation in July 1873, and his observations on it will be found in last year's report. Finding strong indications that teak on level ground in Upper Assam will not thrive ultimately, and with the view of ascertaining whether it will do better on undulating ground, he suggested that a small experiment should be made on the undulating ground between Jaipore and Makum. This was done at *Tippun Hill*, opposite Jaipore. Half an acre was sown in the middle of July, and vacancies filled up in the end of August. In January 1874 the seedlings were found to be very feeble, though the soil was good :—

There were plants alive in per cent.	...	59
Failures	...	41
Total	...	100

Both the Makum and Tippun Hill plantations have been fenced in, and no extension is contemplated. They are to serve as experiments to show whether teak will thrive in upper Assam or not. The expenditure during the year amounted to Rs. 549-3.

RUBBER-PLANTATIONS.

136. As Mr. Mann had great opportunities for studying the habits of *ficus elastica*, the Conservator will give his report under this head *in extenso* :—

"An experimental rubber-plantation of about 18 acres in extent was started in June 1873 on the right bank of the *Kulsi* river, in the Kamroop district, thirty miles west of Gowhatty.

"As pointed out at the time when the Government order regarding these plantations, based on Dr. Henderson's suggestions, reached the Commissioner of Assam, and the matter was discussed with the Conservator of Forests, Bengal, at Shillong, the season had so far advanced that success was hardly possible.

"Still as it was desirable not to lose any time in making the experiment, even though it had to be done under unfavourable circumstances, a commencement was made in clearing lines ten feet in width in a mixed plain forest 15 feet a part, and putting out branches on these lines at distances of 15 feet.

137. "The Kamroop district south of the Brahmaputra is not particularly well suited for the growth of the rubber-tree, it being a dry district compared with the land north of the Brahmaputra and along the foot of the Himalayas.

138. "All rubber-trees in the neighbourhood having been more or less weakened by excessive tapping, only scrubby and very poorly grown branches were procurable at first for the cuttings, and these nearly all died within a month. Further searching for better and more vigorous branches proved so far successful, that by the middle of August all the former ones which had died were replaced, and these looked very hopeful for a short time, until the continued drought and the early cessation of the rains caused them gradually to die off.

139. "The summer months are not the proper time in Assam for the propagation of the rubber-trees, since they are then in full growth and the branches get very much disturbed by the cutting at this season.

"These circumstances combined caused this first experiment to become gradually a failure, which however would not have happened had the last year not been such an exceptionally dry one.

"The plantation was first inspected in July 1873, and showed then in that portion where scrubby branches had been used 33 per cent. of failures; whilst in that portion where more vigorous branches had been put in, only 2 per cent. of failures existed at that time.

"At the end of August the plantation was again inspected, and then showed 11 per cent. of failures where the old vacancies had been filled up; whilst in the part where this had not been done, the failures amounted to 42 per cent.

"By the middle of October the want of rain and moisture, although the forest had been left standing on both sides of these lines, had begun to tell on the cuttings, and the failures in that portion of the plantation where the vacancies had been filled up were 54 per cent., whilst where this had not been done, on account of the season being so far advanced the failures amounted to 88 per cent.

"The last inspection, made on the 18th of February, showed the following results:—

Percentage of plants alive	5
„ failures	95

"This is the result of the first trial, which, under the circumstances above mentioned, could hardly have been otherwise.

140. "Immediately on receipt of the Government orders regarding rubber-plantations in June 1873, the necessary instructions for the palling of a number of rubber-trees was given to ensure a supply of vigorous young branches for this year's plantations and nurseries; and this was perfectly successful, inasmuch as by the end of the rains these trees were covered with numbers of fine young branches.

141. "The cost of this experiment has been:—

		Rs.	A.	P.
1.	Collecting of branches	58	0	9
2.	Clearing lines	84	8	0
3.	Planting branches	29	0	3
	Total ...	171	9	0, or Rs. 9-5-11 per acre.

142. "These 18 acres of 1873 have been replanted, and 17 acres been added on lines 50 feet apart, measured from centre to centre of the lines. The branches were put out at distances of 25 feet, since the land available is either mixed plain or Savannah forest, rendering closer planting than in the lower hill forests advisable.

"In addition to this, nurseries measuring about 2,000 square feet were got ready for cuttings, and Mr. Aylmer reports that he has about 1,200 which are rooted and doing well.

"The expenditure on this year's extension and nursery up to the end of the financial year has been Rs. 206-4-0, which, together with the above amount of Rs. 171-9-0, makes the total expenditure on rubber-plantations in the Gowhatty sub-division Rs. 377-13.

143. "In the *Tezpore sub-division* rubber-plantations on a large scale were started in the Chardooar forest, about 18 miles north of Tezpore, during the cold season of the year under review.

"This locality was selected since the rubber-trees occur naturally in great numbers in this tract of country, reach higher perfection as regards size, and give greater quantities of rubber, than in most other districts of Assam.

"The original rubber-plantation reserve of 200 square miles had its southern boundary placed by the Deputy Commissioner of the district about seven miles away from all roads, villages, and cultivation of any description, in the midst of a very dense evergreen forest, where the difficulties of procuring labour would have been tenfold to what it was at the margin of the forest, and in the rains could not have been procured at all. Independently of this, it would have been extremely unhealthy, and the cost of establishing the plantation and nurseries very much greater, for which reason the district officer's sanction was obtained for commencing operations about one mile north of the northernmost village, and about half a mile inside the forest.

"Proposals for a small additional rubber-plantation reserve of about seven square miles, in accordance with the above permission verbally given, was submitted to the Deputy Commissioner of the district in the usual way.

144. "The soil in the locality where operations were started is alluvial, with deep vegetable mould on the surface; but this is considered of secondary importance, since the rubber-tree will grow on almost any soil, provided it has that combination of heat and excessive moisture of the atmosphere peculiar to the regions along the foot of the Himalayas.

"On this land operations were started on the right bank of the Mansiri river, and lines cut through the forest 20 feet in width—first at distances of 50 feet, and afterwards at distances of 100 feet from each other, on which branches were put out at distances of 50 feet.

"The extent of the area thus brought under cultivation up to the present is 180 acres. No clearing of the ground in the lines is attempted, since the plantation is situated in forests clear enough not to interfere with the young trees, and the surface of the soil is sufficiently open to all atmospheric influences, which benefit the young trees.

145. "A nursery was started on the same land, and beds four feet in width and raised about six inches above the surface constructed, with paths of two feet between the beds. The total area of the nursery prepared, planted, and shaded by grass from above and the sides is 17,700 square feet. Of this area 1,980 square feet were used for experiments with rubber-seed, and the remainder for cuttings, of which latter about 10,600 were made. The making of these cuttings before the end of January had been ordered; but the starting of the work in this locality being new, and Mr. Fisher new to the country, this most important time was lost before the cuttings were put in, and the percentage of losses has been accordingly great.

146. "We have much to learn yet; and as this is the first year, everything is to some extent experimental. We have, however, in spite of the difficulties upwards of 5,000 cuttings rooted and doing well, which will prevent any vacancies remaining after the end of the rains, and leave a large supply for next year's extensions.

147. "About three-fourths of these cuttings were raised under artificial shade, and one-fourth in the open, with shade towards the south from the trees only. The latter cuttings were larger, and the wood harder, and they have done almost as well as those more sheltered. All were watered when necessary.

"On the whole large cuttings of over two feet in length with the wood harder have done better than young soft cuttings, which has to be attributed chiefly to their having been made a month too late, when the spring growth had set in.

148. "To give the raising of rubber-plants from seed a fair trial, about 30 seers of seed, or rather fruit, were collected and sown in three different ways both at the Kulsi plantation, in the Gowhatty sub-division, and the Chardooar plantation, in the Tezpore sub-division. The different modes used were the following:—

"*First*—On beds covered with broken bricks, half of which was sown with entire fruit or figs, and the other half with the fruit broken up or rubbed into powder between the hands.

"*Secondly*—Sown like the above, but on broken charcoal.

"*Thirdly*—Sown like the above, but on earth only.

"The seed was sown in the middle of January and germinated in the middle of April. Germination took place best on the broken bricks, next best on the charcoal, and least on the earth. The seedlings on the charcoal stood the heavy rains best, those on the broken bricks next, whilst those on the soil nearly all perished. They require no shading, and grow all the stronger by exposure to the light and sun; but as a matter of course they will require a great deal more care and attention than cuttings, and for several years, whilst cuttings can be transplanted before they are a year old.

149. "The trees which were lopped last year and supplied this year's cuttings will supply a greater quantity next year, and other trees have been lopped this year in addition, to ensure an ample supply of young shoots for next year's propagation.

150. "The cost of these plantations per acre, it is estimated, will be about as follows:—

	Rs.	A.	P.	
Cutting of lines	1	2	0	
Cost of nursery and planting	0	2	0	
Cost of establishments	0	12	0	
Total ...	2	0	0	per acre.

"The total cost of the Chardooar rubber-plantation up to the end of the financial year has been Rs. 415-3-6."

TEAK IN BENGAL GENERALLY.

151. Regarding the teak-plantations in Chittagong, the Conservator hopes to give in next year's report his views in detail. The following general remarks refer to Bengal and Assam without Chittagong.

152. In last year's report, paragraphs 177 to 188, the Conservator has given his opinion on this subject, which he summed up in these words: "Teak of inferior and moderate quality can be produced in the Bengal plains, Behar, and Lower Assam, but there is no proof as yet to show that superior teak can be produced in the Sikkim terai or in Lower Assam; and in Upper Assam it appears doubtful whether it will thrive at all." The year 1873-74 has brought some new experience. In the first instance during the rains the larva of a borer made its appearance in the Kulsi plantation, in Assam, attacking about one-fifth of all seedlings. In the cold weather it disappeared, but the Conservator fears it will come again in the rains. The seedlings, it is true, have not died altogether, and sent out fresh and vigorous stump-shoots, but still the phenomenon is of a very serious description, and should be carefully watched.

153. Another point is the unfavourable germination of teak-seed in Bengal, especially in the Darjeeling terai. In 1873 all Indian teak-seed failed, and this year ten maunds of Burma seed sown at Bamunpokree under the Conservator's own supervision have produced only a small number of seedlings. This is a very serious consideration, which necessitates a change of programme. As out of the seedlings planted originally only a small percentage reaches maturity, it is not necessary to cover the ground entirely with teak. In 1874 the plantations at Bamunpokree have been laid out half with teak and half with toon. Next season we shall plant teak 15 feet apart either way, or only 194 seedlings per acre, and fill the area up with toon, so as to have finally a plantation in which the seedlings stand 5 feet apart each way. In this way a great saving in teak-seedlings will be effected. Toon, on the other hand, we found this year will spring up like grass, and it stands transplanting remarkably well. In this way it is hoped to reduce the expenditure, which has been extremely high hitherto, to a reasonable figure.

INDIA-RUBBER TREES IN BENGAL GENERALLY.

154. This subject has been freely discussed during the year. The Conservator of Forests arrived in Bengal in December 1872 only, and consequently when writing last year's report his experience of India-rubber was very small. Another year's experience, however, has made him more confident now in expressing a decided opinion on the subject.

155. The *fiscus elastica*, or Bengal and Assam India-rubber-tree, grows naturally as an epiphyte only. The natural trees are found in the warm and moist forests along the foot, and in the side valleys of the mountain-ranges in the north and east of Bengal up to an elevation of 2,000 feet. The seed is

deposited by birds on trees, where the seedling as a rule establishes itself in the upper forks or holes of the branches at a height of from 60 to 100 feet from the ground. It begins at once to send down aerial roots in great numbers, which gradually reach the ground and grow into respectable stems; so that one tree comprises sometimes up to forty and even more stems. All these stems communicate with only one head of branches and leaves, and the proportion of stems to branches and leaves is very great. Each stem supplies only a fraction of the crown with vegetating fluid, and consequently all surplus milk may be removed and manufactured into India-rubber.

156. On the other hand, if the tree has been reared in the ground, it consists of one stem only of from 10 to 15 feet height, with a large crown of branches and leaves. Aerial roots are indicated, which rarely reach the ground, but represent thin dry strings; consequently all the milk upon which the large mass of branches and leaves vegetate has to be supplied by the one stem, and if that is tapped the tree must either die or at least be reduced to a skeleton. Dr. Henderson, late Officiating Superintendent, Botanical Gardens, Calcutta, has evidently overlooked this important difference when proposing to Government that rubber-plantations should be started by planting cuttings into the ground; and he made the additional mistake of assuming that the *ficus elastica* would yield rubber freely in all parts of Bengal, whereas it does so only where growing really luxuriantly, as in the north and east of Bengal, in the warm and moist climate near the foot of the hills, especially the Himalayas. Mr. Mann, who had great opportunities for studying the growth of India-rubber in its natural home, does not believe that the tree will yield rubber freely away from the warm and excessively moist localities indicated above; but he does not think that rearing the trees in the ground will prevent their yielding large quantities of juice. Dr. King, Superintendent, Botanical Gardens, Calcutta, and the Conservator of Forests, on the other hand, do not believe in trees grown in the ground. Dr. King urges to introduce instead the Peru rubber-tree (*Hevea Braziliensis*), of which he has brought a few plants to India, and which have taken root in the Botanical Gardens at Calcutta, as this tree grows without aerial roots and yields the juice freely from all its parts. The Conservator of Forests is of opinion that, if the Peru rubber tree will grow and thrive luxuriantly in India, it should certainly be planted on a large scale; but he has been told by a botanical authority that this tree is not likely to do so further north than perhaps Penang. Should this turn out to be correct, Bengal would after all have to fall back upon the indigenous *ficus elastica*, or give up rubber-cultivation altogether. The Conservator's opinion is that *ficus elastica* should be grown in the most favourable localities, especially in Assam along the foot of the Himalayas, in a way similar to that followed by Nature. Either seed, or much better seedlings, should be deposited on large useless trees in the evergreen forests, and in a systematic way. The difficulty of doing this is not so great as is usually assumed. In all forest countries in India, there are always men to be found who will climb the tallest trees in a remarkably short time; and when the seedling has once been securely established on the tree, it requires no further looking after, whereas plantations on the ground have to be taken care of for a long time, and at considerable cost.

157. Although the Conservator has no doubt in his own mind about the correctness of the above views, still others do not share his opinions; and if *ficus elastica* is to be raised by means of cuttings or seedlings planted in the soil, the Conservator would strongly urge that they be planted not further apart than 15 feet, as proposed by Dr. Henderson, and not 100 by 50 feet, as proposed by Mr. Mann, because this kind of tree will not grow to half or quarter the size of an epiphytic tree. Moreover, he would strongly recommend that some of the largest trees artificially raised at Gowhatty be systematically tapped, to see how much rubber they will yield. Although they grow in less favourable localities than those selected for the Assam rubber-plantations, still they will enable us to form an approximate estimate of the rubber-yielding capacity of trees reared in the ground.

MAHOGANY IN BENGAL GENERALLY.

158. During the year the question has been raised whether mahogany-seed should not be introduced on a large scale from the West Indies. Dr. King proposes to appoint a special seed-collector, and to raise the species of mahogany on a large scale. The tree grows doubtlessly well in the Bengal plains. At Titalia there are, however, some specimens which have not thriven very well hitherto, and the Conservator of Forests thought that the moister and cooler climate might afford an explanation. During the rains of 1873 some seedlings were planted at Bamunpokree, situated immediately at the foot of the Himalayas. These grew very little during the last year, but since the commencement of the rains of 1874 they have made a wonderful start; and the Conservator would not be surprised if the terai, wherever it is well drained, should prove to be a more favourable locality than the rest of Bengal. Certainly the unfavourable growth and the dying off at an early age of two mahogany-trees at Gowhatty, in Assam, warns us to be cautious in damp localities. Three years hence we shall be able to judge of the growth of the young trees at Bamunpokree.

PLANTATION RECORDS.

159. With last year's report the instructions issued regarding the preparation of plantation records were given. During the year those of Cooch Behar and Assam have been taken in hand. The record of the Bamunpokree plantation, parts I and II, has been given in appendix IX; those of the other plantations will be given in next year's report. Part III, which comprises the annual record as the work proceeds, need however only be recorded in the plantation file and the office of the Conservator of Forests.

SECTION V.—YIELD OF THE FORESTS.

COOCH BEHAR DIVISION.

160. In this division we are still occupied with clearing out old stock. Large quantities of timber were felled in former years, a few logs transported to depôts, and the remainder left in the forests where they were felled; however they were shown on the books as lying in so-called forest depôts. Thus it comes that we have a large quantity of logs in depôts on the books, whereas in reality the greater number are lying scattered over the forests, and all that has been done is that the trees have been felled. In some cases, as for instance in the Buxa forest, many of the logs have not even the branches cut off to the present day. On the other hand, these logs, although the expense incurred on them is in some instances not more than eight annas each, make a considerable show in the value of stock. And again, only a portion of them fetch the prices at which they are valued, whereas the greater portion has to be sold off considerably below the estimate. The consequence is that not only do the timber-works now conducted, as exhibited in the annexed statements, appear insignificant, as the logs brought out of the forests are all entered as lying in depôts, but the net revenue appears lower than the year's transactions entitle us to. This will continue to be the case until all old stock has been cleared off, which the Conservator hopes will be the case by the end of 1874-75.

161. On this subject Mr. Gamble reports as follows:—

"Great inconvenience is found by the multiplicity of small forest depôts on the divisional books, such as—

"*Buxa forest.*—Logs scattered all over the forest.

"*Sukna.*—Logs, sleepers, and scantlings lying anywhere in the forests between the Teesta and the Balasun, with the exception of Sivok; the chief points where occasionally a few logs have been collected together being Gulma,

Choklong, Mahanuddy, Hattisurra, Puncheenai, Sukna, and Chirungkhola, the vast majority of the timber being really scattered about the forests, often in very inaccessible spots.

"*Lohagurh.*—Logs lying anywhere in the country between the Balasun and the Mechi, with a few at Hattighisa, on the borders of the Dalka Jhar.

"*Lish and Ghish.*—A number of sleepers lying about, chiefly on Mongpong Hill and in the Lish River.

"*Reyang.*—Logs and sleepers lying all along the Teesta valley.

"*Muraghat.*—Logs lying scattered about the forest.

"It is almost impossible to verify the stock of timber: in many cases timber which appears in the books cannot be found, as for instance at Sivok. At that depôt, after a careful search, over 100 logs and about 300 sleepers borne on the books could not be found."

162. The pieces brought on the books of this division during the year are 112 toon planks and 8 khala kambas; but on reference to form No. 25 it will be observed that although 1,084 logs have been removed by purchasers from station depôts, the number of logs in them at the close of the year surpasses that at the beginning of the year by 204; so that in reality 1,288 logs have been brought from the forests to station depôts. Of these a number of sâl logs were floated from Sivoke to Julpigoree, and 1,176 sâl logs were dragged out of the Buxa forest to the Buxa road, and upwards of 500 carted to Alipore—operations which do not appear in the annual record.

163. Of the old stock at Rangbul depôt, near Darjeeling, 550 logs have been sold by public auction during the year; but the prices realized are very low, and at the last auction no offers at all could be obtained.

The rates realized were:—

		Rs.	A.	P.	
At a sale held in May 1873		0	1	6	per cubic foot.
„ „ „ September „		0	1	4	„ „
„ „ „ November „		0	0	5	„ „
Average		0	1	1	

The fact is that the timber is very inferior in quality, and Mr. Kenoy, of the Public Works Department, who has some ten years' experience in Darjeeling, informed the Conservator that timber seasoned in the log would not last in the Darjeeling Hills, it being consumed by dry rot within a very short time.

Under the circumstances, the remaining old logs will be sold for whatever they may fetch; and in future no hill timber will be kept in depôt. The financial loss on the logs amounts to Rs. 1-8-5 each.

164. A number of years ago this Department attempted to bring the timber of *pinus longifolia* into the market. A hundred logs were bought from the Rajah of Sikkim, brought to the banks of the Rangit river at a cost of Rs. 9 each, and left there to their fate. As a trial ten logs were put up for auction, which fetched one rupee each, or at the rate of Rs. 0-0-4 per cubic foot. Attempts will be made to sell the remaining logs for whatever they may fetch.

165. A clearance auction sale was held at Julpigoree in August 1873. The amount realized was at the following rates.

	In No.	Cubic feet.	Amount. Rs.	A.	P.		Rs.	A.	P.	
Sâl logs ...	87	2,282	1,593	0	0	or	0	11	2	per cubic foot.
Pine logs ...	7	162	10	0	0	„	0	0	1	„ „ „
Unknown ...	1	24	3	8	0					
Khalakambas	19	0	12	0	0					
Sâl planks ...	86	0	53	0	0					

166. The annual sale at *Alipore* was held on the 20th March 1874, when 300 sâl logs were sold, which realized:—

	Logs.	Cubic feet.	Amount. Rs. A. P.	Per Cubic foot. Rs. A. P.
1st class	220	5,978	4,290 0 0	0 11 5
2nd class	80	1,504	704 0 0	0 7 5
Total ...	300	7,482	4,994 0 0	0 10 8

The expenses in bringing this timber to depôt were the following:—

	Rs. A. P.
Felling and barking per log	0 8 0
Dragging (including keep and feed and ten per cent. of value of elephants)	2 0 0
Total ...	2 8 0

	Rs. A. P.	
Or at the rate of	0 1 7	per cubic foot.
Carting	0 3 6	„ „ „
General expenses	0 0 10	„ „ „
Total ...	0 5 11	

The net surplus amounts therefore to Rs. 0-4-9 per cubic foot. The net profit at last year's sale amounted to Rs. 0-3-3 per cubic foot, so that this year shows an increase of 46 per cent. against last year, although the price of the timber was eight pies per cubic foot higher last year. The cost of extracting this year's timber was Rs. 0-5-11 per cubic foot, against Rs. 0-8-1 last year, or a saving of 27 per cent. This is owing to the employment of elephants, instead of coolies for dragging

167. During the year 1874-75 the timber operations in the Cooch Behar Division will be of a different stamp to that of the last few years. The Northern Bengal State Railway is now under construction, and sleepers have to be prepared and logs provided for it. Moreover the surveys of the last season have shown that the Buxa forest is capable of yielding permanently 5,000 sâl-trees per year, and arrangements are being made to work it up to 3,000 trees per year for the present. For this purpose two elephants are available and four more are required.

168. The material removed by private parties from the forests of this division during the year is enumerated in the subjoined list.

Name of Trees.	Number of trees or pieces sold.	Amount realized.	Average amount per piece.	Remarks.
Darjeeling Sub-division.		Rs. A. P.	Rs. A. P.	
Sal ... Green ...	475	4,750 0 0	10 0 0	
Sal ... Dry ...	1	20 0 0	20 0 0	
Sal ... Khala kambas ...	.....	.....	...	
Sissu ... Green ...	3	30 0 0	10 0 0	
Sissu ... Dry ...	5	21 0 0	4 3 2	
Toon ... Green ...	50	615 0 0	12 4 10	
Toon ... Dry ...	4	36 0 0	9 0 0	
Saj	33	330 0 0	10 0 0	
Cheloni	38	388 0 0	10 4 2	
Champ ... Green ...	98	1,176 0 0	12 0 0	
Champ ... Dry ...	6	56 0 0	9 5 4	
Buk ... Green ...	60	720 0 0	12 0 0	
Buk ... Dry ...	2	16 0 0	8 0 0	
Katoos ... Green ...	31	372 0 0	12 0 0	
Katoos ... Dry ...	1	10 0 0	10 0 0	
Pipli	2	18 0 0	9 0 0	
Lali	3	24 0 0	8 0 0	
Acrote	1	20 0 0	20 0 0	
Goguldhup	3	18 0 0	6 0 0	
Panisaj	2	16 0 0	8 0 0	
Budgrat	1	12 0 0	12 0 0	
Puddum (dry)	1	4 0 0	4 0 0	
Miscellaneous trees	10	60 0 0	6 0 0	
Fire-wood	614 tickets.	614 0 0	1 0 0	
Charcoal	10 „	20 0 0	2 0 0	

Names of Trees.	Number of trees or pieces sold.	Amount realized.	Average amount per piece.	Remarks.
Julpigoree Sub-division.		Rs. A. P.	Rs. A. P.	
Sal ... Green ...	1,045	7,387 0 0	7, 3, & 10 0 0	
Sal ... Dry ...	667	683 0 0	1 0 4	
Sal ... Khala kambas ...	1,379	802 0 0	0 9 3	
Sissu ... Green ...	3	21 0 0	7 0 0	
Toon ... Green ...	.....	.....	.....	
Toon ... Dry ...	2	24 0 0	12 0 0	
Cheloni ... Dry ...	2	9 0 0	4 8 0	
Boeri	2	12 0 0	6 0 0	
Total ...	.....	18,284 0 0		
Deduct— Amount due but not realized during the year	.....	62 8 0		
Balance ...	.....	18,221 8 0		
Add— Amount realized on account of former year	.....	240 0 0		
Total shown as revenue on account of timber sale	.....	18,461 8 0		

This statement shows a considerable increase against last year. It appears that most people in this division were formerly under the impression that timber was not to be obtained from the Government forests by private parties. This misunderstanding has now been thoroughly cleared up, and there is no doubt that twice and three times as much timber would find ready purchasers if the Darjeeling sâl-forests could stand so large an increase of yield. The latter is now so fixed as to allow of a gradual improvement of those forests, which have formerly been over-worked.

169. *India-rubber.*—The collection was done by the Department through the mandals of the villages in the Teesta valley and adjoining lower hills. The trees have not been over-tapped, and the quantity collected amounts to 173 maunds. Of this quantity 73 maunds came from Dumsong sub-district, and 100 maunds from the Darjeeling sub-district. The rates paid are Rs. 20 per maund of first class rubber, and Rs. 10 for second class rubber. The total receipts were Rs. 10,669-15-0, or Rs. 64-4-0 per maund sold, 7 maunds having dried while in transit; the total expenditure Rs. 4,027-5-11, leaving a surplus of Rs. 6,642-9-1.

170. Of other articles of minor forest produce, the collection of taj, munjista, hurdi, and rita, brought in Rs. 235; canes Rs. 132, bamboos Rs. 238-8-0. Taj is *cinnamonum albiflorum*, a pretty large tree found up to 4,000 feet elevation. The bark is exported, and the leaves are sold in the bazars for curries.

Munjista is *rubia cordifolia*, a small climbing plant, common from 4,000 to 8,000 feet. Its stems are dried and exported. The plant yields a dye, which varies in colour from yellow to red and reddish brown. Hurdi is *morinda lanceolata*, a shrub common in the terai and lower hills. Its root yields a yellow dye. Rita is *sapindus sp.*, the soap-nut. The fruit is used for washing, epecially for the hair.

CHITTAGONG DIVISION.

171. The Commissioner reports as follows:—"Regarding the quantities of material removed from the forests, the Assistant Conservator writes as follows:—"I have again to report an increased outturn of timber from the Government forests, the yield for the year under review being 2,759 tons, against 2,164 tons in 1872-73 and 1,518 tons in 1871-72. It is with regret that I observe the principal increase is in timber converted into dug-outs, which has increased steadily and perceptibly from 244 tons in 1871-72 to 1,087 tons in 1872-73, and again to 1,640 tons in 1873-74. The largest supply of timber in logs was derived in 1872-73, when 1,056 tons were brought out against 433 tons during

the previous year, and 610 tons in the subsequent or year under report. Converted timber brought out in 1871-72 was 841 tons, against 19 tons in 1872-73, and 509 tons in 1873-74.

"The reason for my regretting the increase in quantity of timber used for boats is that I consider the practice of scooping out trees and making them into dug-outs causes a greater waste of timber than can be justified. In my peregrinations through the forests, I have frequently come across partially scooped logs, which on examination I have found to be abandoned on account of decay or heart-shake. A tree outwardly appearing sound is felled, and the digging out continues until the flaw in the wood is discovered, when it is at once set aside and allowed to rot, and another is cut down and perhaps is treated in the same manner as the first. Besides this, the waste of wood in making this description of boat is very great, and the quantity of timber employed in one such boat would, I believe, be sufficient to construct ten or a dozen planked boats. In my opinion it would be worth while for Government to introduce and encourage the manufacture of built boats at any cost."

172. "As regards this subject, the Deputy Commissioner has made the following remarks:—

"Before condemning such boats altogether, it would be well to ascertain what the relative cost of a planked and of a dug-out boat would be, how much longer the one would last than the other. If boat building is likely to succeed, and I see no reason why it should not, let it be introduced by all means, and the trade in dug-outs will gradually be ousted. If introduced, I would suggest taking advantage of the Government grant for an artizan school. The trade taught at present (goldsmith's) is not attractive to hill-people; perhaps boat-building might prove more successful."

173. "I have asked the Deputy Commissioner to ascertain whether boat-building would be a popular industry among the hill-men, and whether he can obtain the services of an instructor in this art for the artizan school. The best plan for discouraging the manufacture of dug-outs and checking the consequent waste of timber, which has been overlooked by the Deputy Commissioner in his remarks, will be, I think, to levy a heavier rate of tolls on all such boats when brought past the toll-stations. The question will be taken up and considered.

174. "The Assistant Conservator states that the principal supplies of logs are derived from the Kassalong, Chingri, Subalong, and Renkheong streams; that boats are brought from the Kassalong, Chingri, Subalong, Renkheong, and Kaptai streams; and that sawn timber is procured from the Myunni and Chingri valleys.

175. "The subjoined statement gives the quantities of forest produce brought down during each of the last three years:—

Description of Materials.	Year.		
	1871-72. Tons.	1872-73. Tons.	1873-74. Tons.
Timber in logs	433	1,056	610
„ „ boats	244	1,089	1,640
Beams and planks	841	19	509
Total ...	1,518	2,164	2,759

ASSAM DIVISION.

GOWHATTY SUB-DIVISION.

176. Sixty-one sâl logs, left in the Rani open forest by a contractor, who failed the year before, were worked out and brought to Gowhatty. They measured 1,105 cubic feet, and were sold at the rate of Re. 0-9-9 per cubic foot. The expenditure was Re. 0-2-11 per cubic foot, leaving a surplus of Re. 0-6-10 per cubic foot.

177. In the Pantan reserve 201 sâl-trees were felled, worked out to Korkumara depôt by dragging and floating, and sold to the Public Works Department at the rate of Re. 0-13-3 per cubic foot. They measured 4,611 cubic feet, and the expenditure incurred amounts to—

	Rs.	A.	P.	
Felling and floating	0	1	0	per cubic foot.
Dragging, estimated	0	2	6	„ „ „
Total ...	0	3	6	„ „ „
Leaving a surplus of	0	9	9	„ „ „

In addition to the above, 112 sâl-trees were felled, six of them sold at the forest depôt, 58 used in the construction of the bungalow at Kulsi, for the use of the sub-divisional officer, and 48 remain in a temporary depôt on the Kulsi. A further number of 456 sâl-trees were sold from the Kamroop reserves partly to the Public Works Department and partly to private parties at the rate of Rs. 8 each. A number of smaller pieces were disposed of for the aggregate amount of Rs. 143-2.

GOLAGHAT SUB-DIVISION.

178. In the Nambor reserve 450 trees of ajhar and nahor were felled for the Public Works Department; of these 122 logs were brought into the Golaghat depôt, 293 to the banks of the Dhunsiri, and 35 remain in the forest. None of the timber has been made over during the year.

179. Of ajhar sixty-three trees and of nahor two were sold standing in the forest for Rs. 6 each to the Public Works Department.

TEZPORE SUB-DIVISION.

180. From the Balipara reserve 129 dry sâl logs were brought to the banks of the Mansiri and Baroli rivers, and 132 logs and pieces were collected at a temporary depôt on the edge of the forest. One hundred dead sâl-trees were sold in the forest to the Tezpore road-committee at the following rates now in force in Assam for dry sâl timber:—

Size of Piece.		Rates per Piece.		
Middle girth.	Length.	Sâl.	All other reserved trees.	
		Rs. A.	Rs. A.	
Under 2′	Any	0 8	0 6	
2 to 3′	Any	1 0	0 12	
3 to 4′ 6″	Under 15′	2 0	1 8	
3 to 4′ 6″	Above 15′	3 0	2 4	

181. The yield of the open forests in Assam cannot be given, their management being under the district officers.

182. The question how to deal with the India-rubber in Assam has been freely discussed during the year, but no final decision has been arrived at.

SECTION VI.—FINANCIAL.

183. The regular budget estimates for the year 1873-74 were—

	Rs.
Receipts	1,47,400
Expenditure	1,33,888
Surplus	13,512

The actuals of the year are—

	Rs.
Receipts	1,79,366
Expenditure	1,37,498
Surplus	41,868

The net results of the year's work amounts to Rs. 47,937, as exhibited in (revised) form No. 28.

184. As compared with last year's results, the figures stand as follows:—

	Rs.
Receipts in 1872-73	1,49,852
Ditto in 1873-74	1,79,366
Increase in 1873-74	29,514
Expenditure in 1872-73	99,617
Ditto in 1873-74	1,37,498
Increase in 1873-74	37,881
Surplus in 1872-73	50,235
Ditto in 1873-74	41,868
Decrease in 1873-74	8,367
Net results of work in 1872-73	39,986
Ditto ditto in 1873-74	47,937
Increase in 1873-74	7,951

It will be seen that the receipts increased by Rs. 29,514, the expenditure by Rs. 37,881, causing a falling off in the cash surplus of Rs. 8,367; but at the same time the net value of the year's transaction has increased by Rs. 7,951, so that the results stand more favourable than those of last year.

185. The increase of receipts is chiefly under I and II, sale of timber and fire-wood, in the Cooch Behar and Assam Divisions, and under IV, permit fees, &c., in the Chittagong and Dacca Divisions.

186. The large increase in the expenditure is—

	Rs.
Under A.I., timber expenses	5,598
„ A.V., collection of India-rubber ...	4,438
„ A.VI., plantations	9,453
„ A.VII., forest work	2,092
„ B.I., salaries	14,683
„ B.II., travelling allowances	4,208

The increased expenditure under A.I. and V. has been partly repaid to the Department under the corresponding receipt heads, and partly will be in 1873-74. Against the expenditure under A.VI. we have to show an increase of plantation area amounting to 301·5 acres. The benefit derived by the increase under A.VII. cannot be shown in figures. The increase under B.I. and II. has been brought about by a considerable increase of superior and subordinate establishment; and that this expenditure has been spent well, the Conservator trusts will be seen from this and last year's report. The receipts alone have risen from Rs. 1,39,089 to Rs. 1,79,366 during the last two years, and the net profit of the year's work from Rs. 31,429 to Rs. 47,937. Moreover it should be noted that the increase in receipts has been effected by the officers of the Department, whereas the collections by civil officers have fallen from Rs. 60,529 in 1871-72 to Rs. 55,117 in 1873-74.

187. The following table shows the financial results of the several divisions. In it the expenditure of direction has been distributed equally, and that of the Office of Forest Accounts according to the expenditure in the several divisions:—

Names of Divisions.	Receipts.	Expenditure.	Surplus.	Deficit.
	Rs.	Rs.	Rs.	Rs.
Cooch Behar	51,684	56,147	...	4,463
Bhagulpore	7	4,064	...	4,057
Sunderbuns	...	7,082	...	7,082
Chittagong	72,042	16,236	55,806	...
Assam	37,889	51,003	...	13,114
Dacca	17,744	2,966	14,778	...
Total ...	1,79,366	1,37,498	41,868	

It will be observed that only Chittagong and Dacca show a surplus, that is the divisions in which no conservancy measures have been adopted. Assam has worked with a deficit for some years past, owing to the non-settlement of the India-rubber question, and the charging of a good sum of forest revenue under land revenue, whereas the Department has all the expenditure of forest conservancy to bear.

In Bhagulpore and the Sunderbuns we have only been exploring as yet. In the former the Palamow forests will be taken under management at once, so that the year 1873-74 will show some receipts. The question how to deal with the Sunderbuns is still pending.

188. The deficit in the Cooch Behar Division is not only of a temporary nature, but it may also be called an artificial one. In the first instance the accounts of a former contractor, Mr. Kruger, have been adjusted during the year, showing a sum of Rs. 7,074 against the year under expenditure; secondly, an officer and establishment have been entertained for the examination of the Eastern Dooars sub-division, which however yielded no revenue at all. But thirdly and chiefly, owing to the commencement of the Northern Bengal State Railway, the Government of Bengal prevented the Conservator from satisfying numerous applications from private parties for timber. There is not the slightest doubt that the falling off during the year 1873-74 will be more than made up for in 1874-75. Sleepers and beams are already under preparation for the railway, and the Buxa forests will be worked up to 3,000 sâl-trees per year at once, and up to 5,000 trees gradually. The Conservator expects that Cooch Behar will henceforth yield a net revenue equal to that of Chittagong—but with this difference, that the Cooch Behar forests will be worked so as to increase gradually in yielding capacity, whereas it appears more than probable that the Chittagong forests are being worked out gradually.

189. The outstandings of the Department have been decreased during the year from Rs. 17,924 to Rs. 8,842. A furthur reduction will be attempted in 1874-75.

190. The Conservator considers it necessary to refer here to certain remarks made by the Officiating Inspector-General of Forests in his annual report for 1872-73, paragraphs 199 to 203, regarding form No. 28, exhibiting the value of the year's work. The object of form 28 is to exhibit the *merits* of the year's transactions: that is to say, to show how far the administration has been financially successful during the year, irrespective of obligations entered into in former years or for the benefit of future years. It appears to the Conservator that the so-called "revised form No. 28," which was introduced last year, secures the object in view; whereas the presumably more correct form given by the Officiating Inspector-General in his paragraph 203 fails to do so, because it does not take into consideration adjustments made during the year of obligations entered into in former years. And as an instance the Conservator will mention here the adjustment of Mr. Kruger's accounts, a contractor who failed in former years.

The Officiating Inspector-General's objections recorded in his paragraph 200 will be removed simply by calling for the details necessary to check

form 28. Mistakes in calculation, as cited in the case of the North-Western Provinces, can hardly be brought up against the usefulness of the form itself.

As the Officiating Inspector-General's form is not likely to be permanently adopted by Government, and as no decided orders have been received on the subject, the Conservator has prepared form 28 in the same manner as last year.

191. In conclusion, the remarks made by the Commissioner of Chittagong under this section are appended:—

"Under the heading of *receipts and disbursements*, the Assistant Conservator makes the following remarks:—'The financial results show a surplus of Rs. 55,186-8-4, as will be seen from the following:—

		Rs.	A.	P.
Receipts	..	70,648	6	6
Deduct collections on account of previous years ..	..	4,821	2	0
Total	..	65,827	4	6
Add outstandings on account of the year ..	..	2,045	3	0
Total	..	67,872	7	6
Expenditure during the year	..	12,685	15	2
Surplus	..	55,186	8	4

192. "'The revenue of the year shows an increase of Rs. 12,247-10-0, being the difference between Rs. 67,872-7-6 collected this year and Rs. 55,624-13 realized last year. This is partly attributable to the revival of permit-fees and opening of new toll-stations.

193. "'The expenditure during the year likewise shows an increase of Rs. 2,490-13-2. This has arisen almost entirely from additional establishment and payment of commission to toll-collectors appointed on the newly established toll-stations.

194. "'At the end of last year there was an outstanding balance of Rs. 4,821-2-0 on account of that year, which was paid into the Treasury during the year under report. At the end of the year 1873-74, Rs. 2,045-3-0 were in course of transit to the Treasury; and as it was not paid in before its close, it appears as an outstanding item.'

195. "'The Deputy Commissioner makes the following comments on the financial results:—'The financial results of the year are highly satisfactory. Some propositions are about to be submitted regarding the abolition of forest produce and grass-land leases, which bring in an annual revenue utterly insignificant in comparison with the profits made by the lessees. The gist of the proposal is to throw the whole Hill Tracts open to wood and grass-cutters as far as the payment of rental on lands for the privilege of removing forest produce and grass from them is concerned, and to increase the tolls payable on the produce exported in a ratio which will bear some comparison with the sums paid hitherto to the lessees. It is expected that by carrying this proposition into effect a large increase in the collections will result.' I await the receipt of the report promised by the Deputy Commissioner.

196. "The tolls on all rivers in the Hill Tracts except the Fenny are collected by the Forest Department. The collection of the tolls on the Fenny has been made over to the Department since the close of the year. It was formerly in charge of the Hill Chief, Mong Rajah, under the Deputy Commissioner, and all tolls collected on produce coming from the right bank were paid to the Rajah of Hill Tipperah. An agreement has, however, been recently come to with the sanction of Government, according to which five-eighths of the tolls are to be paid to the Rajah of Hill Tipperah and three-eighths credited to Government, the management remaining with the Forest Department, and an official on behalf of the Rajah being present and checking the accounts. The Rajah has also agreed to the rates of tolls on the Fenny being equalized with those on the other rivers in the Chittagong district.

196. "The most important toll-stations which were under the Forest Department during the year are the Kurnafoolee, the Sungu, and the Matamoree toll-stations. On the first-mentioned river Rs. 47,499-15-9 were realized, against Rs. 39,706-1-0 of the preceding year; Rs. 7,854-11-9 were realized on the second river, against Rs. 7,615-1-6 of the preceding year; and Rs. 3,638-10-3 on the third river, against Rs. 3,678-13-9 of the previous year.

197. "The present Deputy Commissioner has suggested that gurjun-oil, of which 2,905 maunds came down the Matamoree alone during 1873-74, should not be left untaxed. His predecessor was, however, I find, of a different opinion, and did not support the Assistant Conservator's proposal for including krug and patti-leaves and gurjun-oil in the list of taxable articles, on the ground that the system at present prevailing of granting leases of the forest products of specified tracts of land already realizes, or should realize, the Government dues on the articles in question. The consideration of this subject may well be postponed, I think, till the receipt of the Deputy Commissioner's report above referred to."

SECTION VII.—GENERAL.

ELEPHANTS.

198. The Department owns at present the following elephants—

Cooch Behar Division	5
Assam	7
Total ...	12

The number provided for Assam is sufficient for the present. Of those in Cooch Behar, two are required for travelling and one for timber works in the Darjeeling sub-division. This leaves two for the Buxa forests, for which six are required to drag out the annual outturn of 3,000 trees. Two elephants have been applied for to be purchased at once, and the funds for two more will be provided for in the budget of 1875-76. The Chittagong Division should also be supplied with two elephants, if conservancy measures are to be adopted in the Hill Tracts.

THE LIST OF TREES FOUND IN THE DARJEELING DISTRICT.

199. Under preparation by Mr. Gamble, has been considerably advanced during the year, but it will not be ready for publication until next year.

CONSERVATOR'S TOURS.

200. The Conservator spent three months, April to July 1873, in Assam, as mentioned in last year's report. Early in September he left Calcutta for the Cooch Behar Division, looking after the plantation work and examining some of the forests near Darjeeling. On the 23rd of October he left Darjeeling with Mr. Metcalfe, Commissioner of Cooch Behar, proceeded to the Rangit and Teesta valleys; to Dumsong; through that sub-division to the Western Dooars; to Julpigoree; thence to Cooch Behar, the Buxa forests, to the Eastern Dooars, inspecting with Mr. Shakespear the sâl-forests of that sub-division, and to Goalpara. From the latter place he proceeded to the outer Garo Hills; examined the forests in the Manda range, returned to Goalpara, and thence to Calcutta, which he reached on the 24th December. During the month of January the Conservator attended the first general forest conference at Allahabad, and he started again on the 25th of February for the Cooch Behar Division, where plantation operations and sleeper-works for the Northern Bengal State Railway necessitated his presence.

PROGRAMME OF WORK FOR 1874-75.

COOCH BEHAR DIVISION.

201. *Darjeeling Sub-Division.*—The examination of the reserved forests is to be proceeded with.

In Dumsong the boundaries of the future reserves will be determined on in conjunction with the Deputy Commissioner of the district.

The reserves already examined will be demarcated with masonry pillars at all important points, and the intermediate wooden posts renewed where necessary.

Cattle-grazing is to be excluded from the terai sâl-foests between the Mahanuddy and Teesta rivers.

Cultivation within the reserves should whenever possible be stopped, and when this is impracticable, transferred to the edge of the forest; the cultivated area to be taken out of forest limits and made over to the Deputy Commissioner of the district with the sanction of Government.

The creepers in the sâl-forests between the Mahanuddy and Teesta should be cut.

The timber operations depend upon the requirements of the Northern Bengal State Railway. The old sleepers on hand will be made over, about 25,000 narrow gauge sâl-sleepers, and about the same quantity of saj-sleepers, if approved of by the Railway authorities, will be cut. Large timber according to requirements and within the normal yield will be worked out. Temperate trees from the upper hill forests will be sold according to requirements.

India-rubber will be collected as usual, but the trees in the Sivok Hill Tract will be strictly protected against tapping for two years.

Plantation operations will be conducted at Bamunpokree and Rangbul according to the general plan of operations. Experiments with India-rubber seed will be made.

202. *Julpigoree Sub-division.*—The work of selecting reserves will be proceeded with first in the Buxa Hill forests, and then in the Borojar Satalia forest.

The Muraghat reserves will be demarcated by masonry pillars at all important points, and the intermediate wooden posts replaced wherever necessary.

The creepers in the Muraghat sâl reserves will be cut, and the reserve protected against fire and cattle. The Dainah sissu-forest will also be protected against fire and cattle.

In the proposed Buxa reserve, if sanctioned, a net-work of roads, running from east to west, and two miles apart from north to south, will be commenced; the beginning to be made on the Buxa road at the 19th-mile post in the southern part of the forest, from that post towards the east to the eastern edge of the Panbari sâl block, to be continued from the 21st-mile post towards the east. During the year 10 miles of road 15 feet broad should be laid out.

No cuttings will be made except in the Buxa forest, where 3,000 old sâl-trees upwards of six feet in girth will be cut and barked. The seasoned timber now lying in the forest will be dragged to the Buxa road, carted to Alipore, and sold, either by private sale or public auction. The 3,000 trees newly cut will be collected in batches along the new roads to be cleared, and next year carted to Alipore.

The old seasoned timber remaining in the Muraghat sâl-forest should be worked out and sold.

The reproductive measures during the year will be confined to protecting the Muraghat sâl and Dainah sissu-forests against fire and cattle. Hereafter the Buxa forest will be taken in hand.

203. *Palamow.*—A senior officer will be deputed to Palamow to organize the administration of the forests, and to select the areas to be declared Government reserves, in conjunction with the civil authorities.

204. *Sunderbuns.*—Enquiries are being made regarding the feasibility of using sundri timber for railway sleepers.

205. *Chittagong.*—The Commissioner writes as follows:—

"It appears that no administrative changes were introduced during the year. For the reasons already stated in the previous year's report, it has been deemed advisable to adhere to the simple system hitherto followed of realizing a fair return from the existing forests by collection of tolls on the numerous rivers which connect the forests with the markets, and of replacing the present cuttings by planting artificial forests to meet the requirements of future years.

206. "It is beyond question, I think, that the system of forestry in force in other parts of the country is not suitable to the Hill Tracts of this division. The system in force in this division has been gradually developed and extended during the year, and I do not consider that the introduction of any new measures for the conservancy of the forests is called for, since, owing to the checks established at the toll-stations, and the policy followed of inducing the joomeahs to take to plough-cultivation, all the action which is at present advisable has been already taken for controlling the amount and size of the timber cut, and for obviating the wholesale burning and destruction of the jungle."

207. And again he writes:—

"It will be seen from a reference to the previous year's report that collectors were appointed on commission to collect tolls on some minor streams. This system was introduced by the Assistant Conservator by way of experiment with the approval of my predecessor, Mr. Hankey, subject to a report on the working of the arrangements at the end of a year. This report has now been received from the Assistant Conservator, and is under consideration. As the commission system has not been found to work well, the toll-stations will be brought under direct management, or will be farmed out.

208. "As regards the trade in India-rubber, the Assistant Conservator states that during the year a trade in India-rubber has sprung up and promises in time to become a large business. The rubber is brought entirely, he continues, from the country beyond Demagiri by the Kookies. It is a matter for consideration whether the article should not be included in the list of forest produce and be made subject to a very light toll at the outset of (say) one rupee per maund. The price at which it is sold is, I believe, about Rs. 45 paid."

The Deputy Commissioner's remarks on this subject are quoted below:—

"The trade in India-rubber has certainly expanded greatly during the past year, but it is not one susceptible of indefinite increase. The Lushais tap the trees till they are thoroughly exhausted, and I hear that the country which used to supply Bepari Bazar, on the Dullessurri, yields little or nothing now. The trade further is so valuable to Government in a political point of view, that I doubt the expediency of taking any measures whatever which would be likely to impede it. India-rubber is an article of forest produce certainly, but the traffic therein which passes through the district has not the remotest connection with the Forest Department; and the question if further considered should be dealt with as one of general administration."

209. "I concur with the Deputy Commissioner in thinking that it would be impolitic to place any check, however slight, on the trade which is now opening out between the wild tribes to the eastward and the Chittagong Hill Tracts and the regulation district of Chittagong, and that as the rubber is not the produce of our own forests, it should be permitted to be brought down the rivers without any tolls."

210. With the sanction of Government the Conservator of Forests, Bengal, will examine some of the Chittagong Hill Forests during the ensuing cold season, so as to be able to advise Government regarding their management.

211. As Assam has been formed into a separate administration, nothing need be said here regarding the further work in that division.

SERVICES OF OFFICERS.

212. The Conservator has every reason to be satisfied with the manner in which the officers of the department have worked during the year.

Mr. A. L. Home, after having been in charge of the office of Forest Accounts from April to December, was occupied in December and January with the examination of the Eastern Sunderbuns. During February and March he was on special duty at the Andaman Islands. He has worked, as usual, in a satisfactory manner.

Captain C. W. Losack was in charge of the Cooch Behar Division until January 1874, when he was transferred to the office of Forest Accounts. He has since been transferred to the Central Provinces.

Of Mr. H. H. Davis the Commissioner of Chittagong writes as follows:—

"The Deputy Commissioner states that as far as he has had opportunities of judging, he considers that Mr. Davis's management is 'both able and energetic.' My predecessor has left no remarks regarding the manner in which Mr. Davis has performed his duties for incorporation in this report."

Mr. J. Sykes Gamble was in charge of the Darjeeling sub-division from the beginning of the year until January 1874, when he assumed charge of the Cooch Behar Division from Captain Losack. Although not successful in plantation work, owing to adverse circumstances and the novelty of the work to him, he has throughout the year taken great interest in the work, and done very good service.

Mr. W. Shakespear returned from leave in November 1873, and during the cold season he examined the sâl-forests in the Eastern Dooars and a portion of the Garo Hills forests. He has worked satisfactorily. He had again to proceed on sick leave immediately after the close of the year.

Mr. W. Johnston was occupied during the whole cold season with the survey, valuation, and mapping of the Buxa forest, a work which he conducted to the entire satisfaction of the Conservator.

Mr. E. Fuchs, a trained officer, who joined the Department early in January, has been posted to the Cooch Behar Division, to make himself acquainted with the work.

The Chief Commissioner of Assam, in forwarding the divisional forest report, has expressed no opinion regarding the work done during the year. The Conservator of Forests, however, has much pleasure in recording that Mr. G. Mann has been most zealous throughout the year, and the division under his charge has to show a large amount of work done during the year. Mr. Mann reports very favourably on the work done by his assistants, Messrs. A. P. Aylmer, W. R. Fisher, and H. B. Condon. The Conservator of Forests gladly endorses the good opinion expressed regarding Messrs. Aylmer and Fisher. Of Mr. Condon's work, however, he knows nothing, as that officer joined the Assam Division after the latter had been separated from Bengal. Mr. E. Forrest was transferred during the year to the Punjab in exchange of Mr. Condon.

Messrs. Mann, Aylmer, Gamble, and Fisher, passed the prescribed examination in Hindustani during the year; Messrs. Johnston and Fuchs have still to pass.

Messrs. Aylmer, Gamble, and Shakespear, were declared competent to hold charge of a forest division or range.

Before concluding, the Conservator has to offer his best thanks to Mr. S. Kurz, Curator, Botanical Gardens, Calcutta, for the kind assistance rendered in determining numerous species of trees from different parts of the country.

FORM No. 21.

FOREST DEPARTMENT, BENGAL.

Annual summary of Revenue in the several Divisions during 1873-74.

BUDGET HEADINGS.	Cooch Behar division.	Bhagulpore division.	Chittagong division.	Total of Bengal.	Assam division.	Dacca division.	Total of Assam.	Grand Total.
	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.
I.—Sale of timber brought to depôt by Government agency	13,434 6 9	.....	.....	13,434 6 9	4,685 15 2	.....	4,685 15 2	18,120 5 11
II.—Sale of firewood and charcoal removed by purchasers	18,461 8 0	.....	.....	18,461 8 0	3,646 2 0	.....	3,646 2 0	22,107 10 0
III.—Duty on foreign timber...	.....	.....	.....	.....	.....	.....	.....	.....
IV.—Permit fees, rent from squatters, &c.*	10,145 5 8	6 0 0	71,892 5 6	82,043 11 2	27,405 10 10	17,744 8 0	45,150 2 10	1,27,193 14 0
V.—Grazing dues and fisheries	832 8 0	.....	.....	832 8 0	.....	.....	.....	832 8 0
VI.—Sale of fruits, babool pods, India-rubber, &c.	8,476 9 8	.....	.....	8,476 9 8	2 2 0	.....	2 2 0	8,478 11 8
VII.—Sale of confiscated and waif timber	.....	.....	.....	.....	.....	.....	.....	.....
VIII.—Fines and forfeitures ...	157 4 3	.....	15 0 0	172 4 3	.....	.....	.....	172 4 3
IX.—Miscellaneous receipts...	176 0 0	0 12 0	134 2 6	310 14 6	2,150 0 0	.....	2,150 0 0	2,460 14 6
Total	51,683 10 4	6 12 0	72,041 8 0	1,23,731 14 4	37,889 14 0	17,744 8 0	55,634 6 0	1,79,366 4 4

* Includes collections by civil officers.

FORM No. 21.

FOREST DEPARTMENT, BENGAL.

Annual summary of Expenditure in the several Divisions during 1873-74.

BUDGET HEADINGS.	Direction.	Cooch Behar division.	Bhagulpore division.	Sunderbun Examination Works.	Chittagong division	Total of Bengal.	Assam division.	Dacca division.	Total of Assam.	Grand Total.
A.—Conservancy and Working.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.
I.—Timber expenses	.....	9,700 9 3	.....	.....	.....	9,700 9 3	2,061 8 4	.....	2,061 8 4	11,762 1 7
II.—Purchase of cattle and stock	.....	1,064 15 9	.....	5 8 0	32 11 6	1,103 3 3	6,317 1 9	.....	6,317 1 9	7,420 5 0
III.—Feed and keep of cattle	.....	2,722 14 5	29 0 6	.....	.....	2,751 14 11	2,501 8 9	.....	2,501 8 9	5,253 7 8
IV.—Rent of leased forests	.....	.....	.....	.....	.....	.....	833 5 4	.....	833 5 4	833 5 4
V.—Charges for collecting revenue on grass, &c.	.....	4,482 8 10	.....	.....	523 11 3	5,006 4 1	1 8 0	.....	1 8 0	5,007 12 1
VI.—Plantations	.....	6,345 14 6	.....	.....	1,945 14 4	8,291 12 10	5,118 8 11	.....	5,118 8 11	13,410 5 9
VII.—Forest work	.....	1,179 12 2	.....	758 6 1	375 0 0	2,313 2 3	344 0 8	.....	344 0 8	2,657 2 11
VIII.—Forest survey	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
IX.—Experiments on timber	.....	13 0 0	.....	.....	.....	13 0 0	.....	.....	.....	13 0 0
X.—Communications and buildings	.....	1,095 15 6	.....	.....	.....	1,095 15 6	621 5 10	.....	621 5 10	1,717 5 4
Total of A. Conservancy and Working	.....	26,605 10 5	29 0 6	763 14 1	2,877 5 1	30,275 14 1	17,798 15 7	.....	17,798 15 7	48,074 13 8
B.—Establishments.										
I.—Salaries—										
1. Pay of Conservator	12,000 0 0	.....	.....	.....	.....	12,000 0 0	.....	.....	.....	12,000 0 0
2. Pay of executive officers	6,200 0 0	14,639 14 9	.....	.....	4,200 0 0	25,039 14 9	13,353 15 0	.....	13,353 15 0	38,393 13 9
3. Office establishments (a) Direction	3,479 7 7	.....	.....	.....	.....	3,479 7 7	.....	.....	.....	3,479 7 7
3. Office establishments (b) Executive	.....	941 13 4	726 2 10	.....	725 0 0	2,393 0 2	1,842 15 10	75 0 0	1,917 15 10	4,311 0 0
4. Forest conservancy establishments	.....	2,606 4 6	14 0 0	.....	.....	2,620 4 6	6,547 6 2	.....	6,547 6 2	9,167 10 8
5. Timber depôt and work establishments	.....	.....	.....	.....	3,084 0 0	3,084 0 0	84 0 0	.....	84 0 0	3,168 0 0
6. Deputation and special allowances	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
I. Total	21,679 7 7	18,188 0 7	740 2 10	.....	8,009 0 0	48,616 11 0	21,828 5 0	75 0 0	21,903 5 0	70,520 0 0
II.—Travelling allowances—										
1. Conservator	2,685 6 0	.....	.....	.....	.....	2,685 6 0	.....	.....	.....	2,685 6 0
2. Executive Officers	1,272 0 4	4,340 12 0	.....	.....	948 0 0	7,060 12 4	5,150 10 8	.....	5,150 10 8	12,211 7 0
3. Subordinate Establishments	213 0 7	165 9 2	354 7 2	.....	276 12 0	1,009 12 11	275 2 0	.....	275 2 0	1,284 14 11
II. Total	4,170 6 11	5,006 5 2	354 7 2	.....	1,224 12 0	10,755 15 3	5,425 12 8	.....	5,425 12 8	16,181 11 11
III.—Contingencies—										
1. Stationery	.....	4 10 0	.....	.....	6 0 0	10 10 0	4 0 0	.....	4 0 0	14 10 0
2. Office rent, carriage of tents and records	87 14 2	111 10 0	.....	.....	56 11 10	256 4 0	54 10 0	.....	54 10 0	310 14 0
3. Pay of Police guards	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
4. Sundries	444 2 5	460 6 0	1 4 4	.....	512 2 3	1,417 15 0	505 14 10	.....	505 14 10	1,923 13 10
5. Postage	139 4 0	203 9 6	.....	.....	.....	342 13 6	127 4 0	2 2 0	129 6 0	472 3 6
III. Total	671 4 7	780 3 6	1 4 4	.....	574 14 1	2,027 10 6	691 12 10	2 2 0	693 14 10	2,721 9 4
Total of B. Establishments	26,521 3 1	23,974 9 3	1,095 14 4	.....	9,808 10 1	61,400 4 9	27,945 14 6	77 2 0	28,023 0 6	89,423 5 3
Grand total of expenditure	26,521 3 1	50,580 3 8	1,124 14 10	763 14 1	12,685 15 2	91,676 2 10	*45,744 14 1	77 2 0	45,822 0 1	1,37,498 2 11

* Includes Rs. 5,833-4-8 on account of charges incurred by civil officers.

FORM No. 22.

FOREST DEPARTMENT, BENGAL.

Annual Abstract Account of the Cash Transactions of the Department during the year 1873-74.

DR. CR.

	Rs. A. P.	Rs. A. P.		Rs. A. P.	Rs. A. P.
To Cash in hand on 1st April 1873	2,011 14 0		By Expenditure of the Department	1,37,498 2 11	
„ Revenue received	1,79,366 4 4		„ Remittances to State Treasuries	1,72,719 8 5	
„ Remittances from State Treasuries	1,29,434 15 4		„ Remittances to the Public Works Department by book transfer	6,534 13 3	
„ Advances recovered	39,399 11 2		„ Advances made	32,977 3 5	
„ Cash recoveries of service payments of previous years ...	60 15 0		„ Provincial services	120 0 0	
„ Refund of Provincial charges	120 0 0		„ Miscellaneous refunds ...	8 4 0	
„ Unadjusted Receipts	8 4 0		„ Remittances to the Civil Department on account, Vienna Exhibition charges	22 3 0	
„ Value of service books	0 1 0		„ Cash Balance in hand on 31st March 1874	1,179 3 10	
„ Uncovenanted Service Family Pension Fund	646 9 0				
„ Income Tax	10 13 0				
		3,51,059 6 10			3,51,059 6 10
Total		3,51,059 6 10	Total		3,51,059 6 10

FORM No. 23.

FOREST DEPARTMENT, BENGAL.

Annual Statement of Outstandings and Liabilities on account of Contractors and Disbursers for the year 1873-1874.

Divisions.	Department Debtor.			Department Creditor.			Balance due.	
	At commencement of the year.	Recoveries in cash and value of supplies and work done during the year.	Total.	At commencement of the year.	Payments made during the year.	Total.	To Department (Outstandings.)	By Department (liabilities.)
	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.
Cooch Behar	.....	21,520 11 6	21,520 11 6	13,832 6 2	13,721 1 6	27,553 7 8	6,032 12 2	.....
Bhagulpore	.....	1,190 15 11	1,190 15 11	507 14 2	813 3 9	1,321 1 11	130 2 0	.....
Assam	.....	19,347 7 6	19,347 7 6	3,572 1 9	18,442 14 2	22,014 15 11	2,667 8 5	.....
Dacca	.....	.....	.....	12 0 0	.....	12 0 0	12 0 0	.....
Total ...	.....	*42,059 2 11	42,059 2 11	*17,924 6 1	32,977 3 5	50,901 9 6	*8,842 6 7	.....

	Rs. A. P.
* Difference with Form No. 22	2,659 7 9
Thus :—Amount Credited in Assam under Advances Recovered in previous year for which there were no Debits in Account Current	1,650 0 0
Ditto Admitted items ditto	509 7 9
Ditto Recovered in Cash, Credited as Revenue	500 0 0
Total ...	2,659 7 9

	Rs. A. P.
* Closing Balance of last year as per annual report	11,927 3 7
Add—Amount added to the opening Balance of the Cooch Bahar division by transfer ...	5,997 2 6
Total ...	17,924 6 1

FORM No. 24.

FOREST DEPARTMENT, BENGAL.

Statement of Timber brought to Depôt from the different Forest Divisions during the year 1873-74.

Name of River or Division.	Forest.	Description of Timber.	Pieces.	Cubic feet.	Total of each River or Division.	
					Pieces.	Cubic feet.
Cooch Behar ...	Silligori...	Toon planks	112	23		
	Alipore	Khalakambas	6	.....		
	Duduah...	Ditto	2	.....	120	23
Assam	Gowhatty	Sál logs	61	1,105		
	Kukurmara	Ditto	201	4,611		
	Kulshi	Ditto	84	1,761		
	Ditto	Khala kambas	28	.....		
	Golaghat	Hulluck logs	10	277		
	Ditto	Nahor ditto	61	1,148		
	Ditto	Ajhar ditto	60	2,246		
	Ditto	Jamu ditto	1	40		
	Ditto	Miscellaneous ditto	6	.....		
	Ditto	Boats	6	.....	518	11,188
		Total			638	11,211

FORM No. 25.

FOREST DEPARTMENT, BENGAL.

Annual Timber account for 1873-74.

PARTICULARS.		Pieces.	Total.	PARTICULARS.		Pieces.	Total.
I.—Stock in hand at the following depôts at commencement of the year.				I.—Timber removed by purchasers from depôts			
1. At station depôts—				*Cooch Behar Division.*			
Cooch Behar Division.				Logs	1,084		
Logs	1,592			Planks and scantling	199		
Sleepers	14,397			Khalakambas	123		
Planks and scantling	505					1,406	
Khalakambas	91			*Assam Division.*			
		16,585		Logs	296		
Assam Division.				Khalakambas	6		
Logs		41		Boats	6		
2. At forest depôts—						308	
Cooch Behar Division.							1,714
Logs	5,229			II.—Timber lost or used by the Department—			
Sleepers	11,078			*Cooch Behar Division.*			
Planks and scantling	232			Plank		1	
Khalakambas	126			*Assam Division.*			
		16,665		Logs		81	
			33,291				82
II.—Timber received at depots from the forests.				III.—Stock in hand at close of the year—			
1. At station depôts—				1. At station depôts.			
Cooch Behar Division.				*Cooch Behar Division.*			
Planks and scantling	112			Logs	1,796		
Khalakambas	8			Sleepers	14,403		
		120		Planks and scantling	40		
Assam Division.				Khalakambas	452		
Logs	484					16,691	
Khalakambas	28			*Assam Division.*			
Boats	6			Logs	148		
		518		Khalakambas	22		
			638			170	
				2. At forest depôts.			
				Cooch Behar Division.			
				Logs	3,941		
				Sleepers	11,072		
				Planks and scantling	197		
				Khalakambas	62		
						15,272	
							32,133
Total		.....	33,929	Total		.....	33,929

Detail of timber used by the Department:—
Cooch Behar division, 1 plank, repairing office table.
Assam ditto 58 logs, building plantation bungalow.
13 „ washed away by floods.
10 „ written off as useless, (rotten).

Total ... 82 pieces.

FORM No. 26.

FOREST DEPARTMENT, BENGAL.

Statement showing the amount realized on account of the different classes of Timber sold during the year 1873-74.

NAME OF DIVISION AND DESCRIPTION OF TIMBER.	Number of logs and pieces.	Cubical contents.	Amount realized and due on account of timber sales.	Average amount per log.	Average cubical contents per log.	Average amount per ton of 50 cubic feet.
Cooch Behar Division.			Rs. A. P.	Rs. A. P.		Rs. A. P.
Logs	1,084	35,605·	13,237 11 4	12 8 4	32·9	18 9 5
Planks and scantling...	199	146·	118 11 5	0 9 6	·73	40 11 10
Khalakhambas	123	.....	130 0 0	1 0 11	.....	.....
Assam Division.						
Logs	296	5,716·	4,557 15 2	15 6 4	19·3	39 13 11
Khalakhambas	6	.....	3 0 0	0 8 0	.....	.....
Boats	6	.....	125 0 0	20 13 4	.....	.....
Total ...	1,714	41,467·	18,172 5 11	10 9 8	26·26	21 14 7
Deduct—Amount due but not yet realized			69 0 0			
Balance... ...			18,103 5 11			
Add—Amount realized on account of former years			17 0 0			
Total shown as Revenue on account of timber sales			18,120 5 11			

FORM No. 27.

FOREST DEPARTMENT, BENGAL.

Statement showing the amount expended on account of timber received from the different Forest Divisions during 1873-74.

DIVISIONS.	Number of logs.	Cubical contents.	Timber expenses.	Conservancy expenses, cost of establishments, &c., excluding direction.	Total amount expended, excluding direction.	Average amount paid per log.	Average cubical contents per log.	Average amount paid per 100 cubic feet.	REMARKS.
			Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.		Rs. A. P.	
Cooch Behar	1,370*	35,342	3,682 9 3†	4,706 11 6	8,389 4 9	6 1 11	26·	23 6 4	Column 5.—The amount actually incurred for stock for timber purposes has been taken, $\frac{2}{3}$ of expenditure for stock (cattle) in Cooch Behar, and $\frac{3}{3}$ in Assam has been included. Establishment charges have been taken at $\frac{1}{3}$ of the entire establishment charges.
Assam ...	518	11,188	2,061 8 4	5,352 6 1	7,413 14 5	14 4 11	22·	66 4 3	
Total ...	1,888	47,030	5,744 1 7	10,059 1 7	15,803 3 2	8 5 11	25·	33 9 7	

* Includes 1,250 logs carried from forest to market depôts.

† Rs. 6,018 representing credit allowed under orders of the Government of Bengal, in letter No. 4,596, dated 19th October 1872, in settlement of claims with Mr. Kruger, a former contractor, not taken into account.

(REVISED) FORM No. 28.

Annual account of Revenue realized in the Forest Department, Bengal, during 1873-74.

DR. CR.

RECEIPTS.	Rs. A. P.	DISBURSEMENTS.	Rs. A. P.
Amount of revenue realized in 1873-74	1,79,366 4 4	Amount disbursed in 1873-74	1,37,498 2 11
Deduct— Amount realized on account of previous periods ...	5,346 2 0	*Deduct*— Amount disbursed on account of transactions of previous periods*	8,091 14 1
Balance ...	1,74,020 2 4	Balance ...	1,29,406 4 10
Add— Outstandings on account of the year Rs. 4,241 9 9 Minus for bad debts	4,241 9 9	*Add*— Amount due for transactions during the year under review, but not yet disbursed	950 3 6
Value of the year's transactions...	1,78,261 12 1	Real cost of the year's transactions	1,30,356 8 4

	Rs. A. P.
Value of the year's transactions ...	1,78,261 12 1
Cost of ditto ...	1,30,356 8 4
Balance ...	47,905 3 9
Add— Difference between the value of stock at commencement and close of the year	31 8 4
Net results of the year ...	47,936 12 1

* Includes Rs. 7,074-12-6 paid on account of credit allowed for removing 468 logs to depôts in 1871-72, to Mr. Kruger, a former contractor; by order of the Government of Bengal, contained in their letter No. 4,596, dated 19th October 1872.

Explanation of difference between the value of stock at commencement and close of the year 1873-74.

	Sale value of excess stock at close of the year.	Sum required to replace deficiency at close of the year.	Difference	
			In favor of the year.	Against the year.
	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.
Timber, 1,287 pieces at Rs. 6-8-0 each	.....	8,365 8 0	.....	8,365 8 0
„ 129 „ „ 5-5-7 „	680 0 0	.....	680 0 0	.....
Other stock	7,717 0 4	.....	7,717 0 4	.....
Total ...			8,397 0 4	8,365 8 0
Deduct—Balance against the year			8,365 8 0	
Net balance in favour of the year ...			31 8 4	

FOREST DEPARTMENT, BENGAL.

Area of Reserved Forests in 1873-74.

Reserved Forests.		Area in 1872-73.	Added during the year.	Excluded or transferred to other heads.	Total remaining in 1873-74.
Cooch Behar Division.		Sqr. miles.	Sqr. miles.	Sqr. miles.	Sqr. miles.
Sikkim sub-division	Hill tracts	75·	.....	.....	75·
	Terai	31·	.....	.....	31·
Western Dooars sub-division	Mooraghat forest	.....	12·	.....	12·
	Dainah sissu forest	.....	1·8	.....	1·8
Assam Division.					
Kamroop district	Matiakar (sâl forest)	3·5	.....	.....	3·5
	Bordooar (ditto)	23·	.....	.....	23·
	Pantan (ditto)	12·	.....	.....	12·
Nowgong district	Kholahaut (ditto)	7·5	.....	.....	7·5
	Deboka (ditto)	3·25	.....	.....	3·25
	Mikkir hill (mixed evergreen)	65·	.....	.....	65·
Seebsaugor and Naga Hills district	Nambor (ditto)	100·	.....	.....	100·
Durrung district	Khalingdooar (reserve)	.....	9·75	.....	9·75
	Balipara (ditto)	.....	87·8	.....	87·8
	Kulshi plantation (ditto)	.....	5·5	.....	5·5
	Total	320·25	116·85	.....	437·10

FOREST DEPARTMENT, BENGAL.

Area of Unreserved Forests in 1873-74.

Unreserved Forests.	Area in 1872-73.	Added during the year.	Excluded or transferred to other heads.	Total remaining in 1873-74.	Remarks.
	Sqr. miles.	Sqr. miles.	Sqr. miles.	Sqr. miles.	
Cooch Behar division	765	.....	436	329	422 square miles transferred to Assam. 14 „ „ declared reserves.
Chittagong „	5,670	.....	.....	5,670	
Total	6,435	.....	436	5,999	
Assam division	4,565	422	103	4,884	422 square miles received from Cooch Behar division. 103 square miles declared reserves.
Dacca „	4,000	.....	.....	4,000(?)	
Total	8,565	422	103	8,884	
Grand Total	15,000	422	539	14,883	

FOREST DEPARTMENT, BENGAL.

Area of plantations for the year 1873-74.

Name of plantation.	Area in 1872-73.	Total cost.	Area added during 1873-74.	Amount expended during 1873-74.	Total area up to 1873-74.	Total expenditure incurred up to 1873-74.	Remarks.
Cooch Behar Division.	Acres.	Rs. A. P.	Acres.	Rs. A. P.	Acres.	Rs. A. P.	
Rungbool	450	9,195 0 6	.....	209 0 9	450	9,404 1 3	Since the close of the year it has been discovered that the area of this plantation, laid out in 1868 and 1870, is only about one-third of that entered in the books. A survey of it is now being made and the necessary correction made in next year's report.
Dhobi jora	42	32 0 0	.....	.....	42	32 0 0	The area of this plantation will also be verified.
Bamunpokree	69	3,589 15 10	22	6,001 15 6	91	9,591 15 4	According to survey made during the year.
Ditto India rubber	.....	.....	.....	100 8 3	.....	100 8 3	Failure, no area entered.
Mahanuddy	14	45 8 0	.....	.....	.....	45 8 0	Area has been struck off, failure.
Gulma	14	103 8 0	.....	.....	.....	103 8 0	Ditto ditto ditto.
Ramshai Hat	.....	133 13 6	.....	.....	.....	133 13 6	
Fallacotta	3	204 4 11	.....	.....	3	204 4 11	
Chittagong Division.							
Sitapahar	8	410 13 9	2	226 14 9	10	637 12 6	
Kasalong	.....	4 10 0	.....	.....	.....	4 10 0	
Pahartulli	5	324 14 6	.....	.....	5	324 14 6	
Holingamara	.....	300 0 0	48	1,718 15 7	48	2,018 15 7	
Total of Bengal	605	14,344 9 0	72	*8,257 6 10	649	22,601 15 10	
Assam Division.							
Makoom (teak)	4·	536 12 6	7·	510 11 0	11·	1,047 7 6	
Tippun Hill (do.)	.....	.....	·5	38 8 0	·5	38 8 0	
Kulshi (teak)	8·	411 13 6	25·	2,196 7 11	33·	2,608 5 5	
Kulshi (rubber)	.....	.....	35·	377 13 0	35·	377 13 0	
Kulshi (sissu)	.....	.....	10.	481 7 8	10·	481 7 8	
Balipara (rubber)	.....	.....	180·	415 3 6	180·	415 3 6	
Shillong tree-nursery (under the Deputy Commissioner, Khasi Hills)	5·	.....	.....	1,098 5 10	5·	2,004 10 11	
Total of Assam	17·	1,354 15 1	257·5	5,118 8 11	274·5	6,973 8 0	
Total	622·	16,199 8 1	329·5	13,375 15 9	923·5	29,575 7 10	

* Rs. 34-6 excess shown in Form No. 21 represents cost of supplying seeds, &c., to other provinces.

FOREST DEPARTMENT, BENGAL.

Area of Forest tracts protected from fire up to 1873-74.

Forests.	Area in 1872-73.	Total cost.	Additional area protected in 1873-74.	Amount expended in 1873-74.	Total area protected up to 1873-74.	Total expenditure incurred up to 1873-74.
Cooch Behar Division.	Acres.	Rs. A. P.	Acres.	Rs. A. P.	Acres.	Rs. A. P.
Mooraghat	420	30 2 0	7,260	31 8 0	7,680	61 10 0
Sivok	...	.....	.....	136 7 6	.....	136 7 6
Assam Division.						
Pantan	...	.....	3,200	37 1 0	3,200	37 1 0
Berdooar	...	.....	6,400	21 10 0	6,400	21 10 0
Matiakar	...	.....	640	14 0 0	640	14 0 0
Kholahaut	...	.....	960	9 12 0	960	9 12 0
Balipara	...	.....	320	10 0 0	320	10 0 0
Total	420	30 2 0	18,780	260 6 6	19,200	290 8 6

FOREST DEPARTMENT, BENGAL.

Prosecutions for breaches of Forest Rules during 1873-74.

Divisions.	Number of prosecutions.		Convictions obtained or still pending.			
			Number of cases.		Number of persons.	
	Number of cases.	Number of persons.	Convictions.	Pending.	Convicted.	Under trial.
Cooch Behar	5	9	4	1	4	1
Assam	7	14	2	.....	6	.....
Total	12	23	6	1	10	1

A. L. Home, *Deputy Conservator of Forests,*
In charge, Office of Forest Accounts, Bengal.

APPENDIX I.

FORM I.—*List of Trees, Shrubs, &c., observed in the Eastern Sunderbuns, by* A. L. HOME, ESQ., *Deputy Conservator of Forests, Bengal, December* 1873 *to January* 1874.

No.	Systematic names.	Local names.	REMARKS.
1	Heritiera littoralis ...	Sundree ...	A hard, heavy wood. Grows a tree to 50′ and occasionally over in height; a brownish red timber. used extensively for beams, buggy-shafts, flooring, and boat-building planks, posts for building purpose, and furniture. Also for masts and rudders.
2	Averrhoe carambola...	Kamrang ...	Said to grow to a tree; a hard reddish timber, fruit eaten by natives. Timber valued, and used for building purposes, and furniture.
3	Sonneratia acida ...	Orcha ...	Grows to a tree. Yields a white light wood, but said to be very hard and durable. Fruit eaten by natives.
4	Carapa sp: ...	Badul ...	Grows to a fine large tree producing a reddish brown heavy wood; planks used for boat building.
5	Euphoria Danura ...	Nuncha ...	A tree attaining a height of 50′ and a girth of 5′. Producing a white timber used for boat-building planks, and also for building purposes, flooring, &c.
6	Cyclostemon subsessile	Bun-bokul ...	Grows to about 40′ in height, and to 4′ in girth. Produces a white timber used for planking, &c. Occasionally met with only.
7	Diospyros Embryopteris.	Gab ...	Grows to a tree 30′ to 40′ in height, and to 5′ in girth. Wood used for fuel. Fruit (bright red when ripe) eaten by natives. The seeds are crushed and mixed with water, when the tar like production of this process is smeared over the outside of boats to to render their planks hard and water-tight.
8	Carapa obovata ...	Poshoor or Dhundul	Grows to a tree producing a deep red wood, used for building purposes.
9	Avicennia tomentosa	Bani ...	A tree which grows generally along the edges of rivers and nullahs; gives a white, heavy wood, very brittle, of no use for anything but fire-wood. Bears a round seed-case about 1½″ long, containing a single bean-shaped seed. and very small yellow flowers.
10	Sonneratia apetala ...	Keowra ...	Grows to a tree on the banks of rivers in these parts. Wood used for planking, &c.; not much prized.
11	Croton drupaceum ...	Nun bhantwi ...	A flowering shrub growing to about 10′ in height. Has a small white scented flower. Wood used as fuel; leaves boiled down and applied as poultices to sprains, &c. Very occasionally met with.
12	Petunga Roxburghii	Jhijir ...	Grows to a small tree about 15′ in height; produces a hard, pure, white wood, used for making boxes and native furniture. Has a small white flower; only very occasionally met with.
13	Pongamia glabra ...	Dalkaramcha ...	Grows to a tree gives a light, white timber, used for oil-mills and fire-wood. The seed produces an oil of a red colour; used by natives medicinally.
14	Ceriops Roxburghiana	Goran ...	Grows occasionally to 35′ in height, but generally attains a girth of 1·5′ only; wood used extensively for posts in native buildings, and also for firewood. Heart-wood a deep dull red colour, very hard and tough; bark used for tanning.
15	Excœcaria Agallocha	Gengwa ...	Grows occasionally to 5′ girth, and 40′ in height, though generally cut for posts when of small girth. Useful wood for general carpentering purposes, such as toys, bedsteads, tables, &c.; &c.; a white timber. The juice which exudes from the bark when green is very poisonous.
16	Amoora Cucullata ...	Amur, or Latmi, or Nutmi.	Grows in favorable localities to 40′ and 50′ in height, attains a girth of 2′ to (occasionally) 3′; wood used for posts for building purposes, and firewood; heart-wood very hard and of white color; a very heavy timber.
17	Afzelia bijuga ...	Shoondal or Hingeh	Grows to a tree, producing a white, light timber, used for packing-cases, &c.
18	Bruguiera gymnorhiza.	Kakra, or Gurjun	Grows to a 3′ feet, and occasionally 4′ feet girth, throwing out acrial roots from 8′ to 12′ up the main trunk, which forms a circle round a full grown tree of 8′ to 10′ in diameter; a hard brittle wood, not extensively used, and when used, for fire wood only.
19	Hibiscus tiliaceus ...	Bola or chelwa ...	A straggling, crooked growing shrub; wood used as fuel, bark for rough ropes for binding fire-wood on boats. Has a red flower.
20	Agati grandiflora ...	Bagful ...	Grows to a tree, producing a white timber, light; used for posts in native houses and for firewood.
21	Ficus nitida ...	Zir ...	Grows to a tree; gives a white, hard and brittle wood, used as fuel only; said to bear a very small bright red flower at the end of each little branchlet behind the leaves.
22	Heritiera? ...	Tap. Sundree ...	A spreading shrub, growing to about 5′ in height. Wood used as fuel.
23	Cynometra bijuga ...	Shingr ...	Grows to about 3′ girth occasionally; a small tree, white hard wood; small white flower, and small round seed-pod, containing a single seed. Wood used for posts in native huts, and as fuel.
24	Tamarix gallica ...	Jhau ...	A very common shrub in some parts, grows to about 9′ in height; wood used occasionally as firewood.
25	Clerodendron Siphonanthus.	Baunhatti ...	A flowering shrub, bearing a deep red flower. Its wood is said to be used as a charm, tied round the neck, for various ailments.
26	Excoecaria Indica ...	Batul ...	A shrub, grows to about 6′ in height, said to have a small white flower growing in clusters; sweet scented. Wood used as fuel.
27	Clerodendron inerme	Butraj ...	A flowering shrub, bears a bell-shaped white flower; gives a white wood used occasionally as fuel.
28	Briedelia scandens ...	Harinhara ...	A shrub, small white flower; wood, white. Used for fuel only.

APPENDIX I.—(*Continued*)

No.	Systematic names.	Local names.	REMARKS.
29	Cerbera odallum ...	Dabur or Dhakur	A flowering shrub, white flower, grows to 7′ and 8′ in height; wood used occasionally as fuel.
30	Barringtonia racemosa	Bun-badam ...	A small tree, grows to about 14′ in height and 1′ in girth, wood occasionally used as fuel.
31	Kandelia Rheedei ...	Guria ...	A shrub, grows to about 11′ in height, and used occasionally as fuel.
32	Salacia Coromandeliana.	Shingl ...	A small shrub, grows to about 6′ in height; wood used as fuel.
33	Loranthus buddleioides.	Rangin ...	A flowering shrub; has a small bright red flower.
34	[?] ...	Golpatta ...	Leaves used extensively for thatching in Calcutta and throughout the villages and towns near the Sunderbuns.
35	Derris uliginosa ...	Kelia-lota ...	A creeper. Its wooden stem is used by boatmen for tying logs on to boats.
36	Calotropis gigantea...	Akund ...	A weedy looking, flowering shrub; grows to about 7′ in height, and bushy. Flowers used as offerings to sacred shrines. Leaves used for poultices on strains and bruises. Charcoal of this shrub is used in manufacture of country gun-powder.
37	Acrostichum aureum...	Dhekwa ...	A fern, used occasionally for thatching; grows to about 3′ in height.

A. L. HOME,
Deputy Conservator of Forests,

APPENDIX II.

Statement showing results of forest valuation survey of the Eastern Sunderbuns (sundree, timber forests). Area 1,083 *square miles.*

No.	Position of line of Survey.	TREES MEASURED.																				Area of survey in acres.
		Sundree.					Shingr.			Nutmi.			Gengwa.			Bani.					
		I.	II.	III.	IV.	V.	I.	II.	III.	I.	II.	III.	I.	II.	III.	I.	II.	III.	IV.	V.	
		Under 1 cubit.	Between 1-2 cubits.	Between 2-3 cubits.	Between 3-4 cubits.	Between 4-5 cubits.	Under 1 cubit.	Between 1-2 cubits.	Between 2-3 cubits.	Under 1 cubit.	Between 1-2 cubits.	Between 2-3 cubits.	Under 1 cubit.	Between 1-2 cubits.	Between 2-3 cubits.	Under 1 cubit.	Between 1-2 cubits.	Between 2-3 cubits.	Between 3-4 cubits.	Between 4-5 cubits.	A. R. P.
1	North-north-east into block No. 208 from small nullah running north-north-west out of Seepsah river, 6,300 feet	17,331	1,852	2,015	431	2	345	41	7	1,161	63	15	.....	.....	...	2	...	6	4	1	14 1 34
2	North-north-west into block No. 208 from a point in the Seeepsah river, 5,700 feet	29,482	2,832	1,936	418	2	579	14	1	1,839	4	12	.....	.....	...	1	4	2	...	1	13 0 13
3	Into block No. 230 from a point on the Mamki khal, first north-east, then east, and again north-east, 5,760 feet	38,392	8,470	2,663	257	3	3,129	314	61	.....	...	...	.....	.....	...	...	...	...	...	...	13 0 35
4	Into forest from khal, taking off west of Chota Sella river in unallotted portion, east of Pursur river, north-north-east, 5,340 feet	27,840	3,669	1,787	142	1	.....	...	...	474	20	3	6,228	2,585	162	4	7	...	2	6	12 1 1
5	Into forest from khal, taking off east-south from Chota Sella river, about middle of unallotted portion east of Pursur river, north 4,410 feet	24,576	2,260	1,691	109	1	.....	...	...	634	141	8	2,161	774	192	56	31	8	17	3	10 0 19

1.—First through undergrowth of golpatta and hurtal with young sundree intersperced with creepers. Afterwards, forest much more open, with dense undergrowth of fine, healthy, straight young sundree, occasional shingr and natmi seedlings; counted 138 dead sundree, all mature, fallen and standing; which would appear generally to have died off from their tops. Sundree seedlings absolutely cover the ground all around. End of line brought up by impassable nullah.

2.—For 1,250 feet through dense undergrowth of golpatta and sundree saplings covered with kelia creepers. Afterwards, almost pure young sundree undergrowth, extremely densely packed, the whole of very vigorous and healthy growth, with occasional shingr and nutmi seedlings intermixed. Counted 126 mature and dead sundree, standing and fallen. Measured a fine old hollow poshur, outside the line, 13'8" in girth; 5' from ground. A large branch at 14' had been blown off.

3.—Through dense undergrowth of kiah and hurtal, intermixed with sundree and shingr seedlings for 620 feet, when the kiah and hurtal gradually disappeared, leaving an undergrowth of almost entirely sundree seedlings, with a few shingr here and there. The sundree in this block is particularly healthy, well-grown timber, the young trees especially have very fine straight trunks to 30 feet, without branching. Counted 71 mature, and 13 medium (old) sundree stumps and 119 mature trees of the same, dead, fallen and standing; measured a fine old bani 16' 1" in girth outside line of survey, with hollow trunk, 18' without branching.

4.—During first 520 feet sundree predominated over the gengwa, which order was reversed for next 690 feet, when sundree again predominated, and gengwa gradually became less and less, undergrowth throughout principally sundree seedlings with gengwa, a few nutmi and goran, forest generally open, and free from large creepers. The growth is very straight, but stunted compared with that found in former surveys; most of the mature trees bearing parasites, and having a diseased appearance about the foliage in consequence; met with 69 mature sundree, dead, fallen and standing. The general length of bole does not exceed 18 feet.

5.—Undergrowth almost entirely sundree and other seedlings, very closely packed, sundree predominating everywhere. Growth of all trees very straight and healthy, sundree standing almost perfectly straight to 35,' this being the finest growth met with during the surveys. Felling had recently been carried on about here. Counted 168 mature, and 177 medium, sundree stumps, and 51 mature sundree, dead, standing and fallen. Forest free from large creepers and thorns.

APPENDIX III.

FORM I.—*List of trees observed in the Garo Hills, Manda valley, by* DR. W. SCHLICH, *Conservator of Forests, Bengal, between the 5th and 11th December* 1873.

No.	Name of family.	Systematic name.	Local name, Garo.	REMARKS.
1	Dilleniaceæ ...	Dillenia pantagyna Roxb. ...	Akachi ...	Found everywhere, especially with sâl.
2	Ditto ...	Ditto scabella Roxb. ...	Ditto ...	Found here and there, sometimes in good numbers.
3	Terustoemiaceæ ...	Schima Wallichü ...	Boldak ...	Either the same, or very nearly the same as cheloni, found in most parts, and in fine specimens.
4	Dipterocarpeæ ...	Shorea robusta ...	Bolsal ...	Found in most parts, but only in certain spots in large numbers.
5	Malvaceæ ...	Kydia calycina Roxb. ...	Boldobak ...	Wood soft: tree used for propagation of lac insert.
6	Ditto ...	Bombax malabaricum ...	Bolchü ...	Not very frequent.
7	Sterculiaceæ ...	Sterculia Villosa (?) ...	Udare ...	Tree not very frequent. Bark used for head-bands, on which the Garos carry their loads.
8	Ditto ...	Acerifolium ...	? ...	
9	Ditto ...	Sterculia colorata ...	Bolazong ...	Small tree; not used.
10	Burseraceæ ...	Garnga pinnata ...	Chitompa ...	Found everywhere; apparently not used.
11	Ditto ...	Canarium Bengalense ...	Tekreng ...	Used for house-posts; fruit which ripens in August. is eaten.
12	Meliaceæ ...	Guarea Mollis-Wall ...	Bolashin ...	Large tree; not used.
13	Ditto ...	?	Tebrat ...	Large tree; not used.
14	Sapindaceæ ...	Aesculus punduana-Wall ...	Bolnawak ...	Not used.
15	Anacardiaceæ ...	Mangifera Indica ...	Tegachu ...	Planted only.
16	Ditto ...	Semecarpus anacardium ...	Bawaræ ...	Marking nut tree.
17	Ditto ...	Spondias mangifera ...	Tongrong ...	Wood not used.
18	Therebintaceæ ...	Rhus sp. (?) ...	Koti ...	Not used.
19	Leguminosœ ...	Erythrina sp. ...	Mandal ...	Some fine tall specimens were observed.
20	Ditto ...	Butea frondosa ...	Palash ...	Found chiefly in the plain near Damra.
21	Ditto ...	Cassia fistula L. ...	Sonaru ...	Not used.
22	Ditto ...	Banhinia sp. ...	Bagbakal ...	
23	Ditto ...	Ditto ...	Mœgong,	
24	Ditto ...	Albizzia stipulata ...	Selcho ...	Used for boats.
25	Ditto ...	Ditto procera Bth. ...	Kili ...	Used for boats.
26	Ditto ...	Derris robusta ...	Bolkakarü ...	Not used.
27	Combretaceæ ...	Terminalia Belerica Roxb. ...	Chirorœ ...	Frequently met with.
28	Myrtaceæ ...	Eugenia jambolana ...	Chambu ...	Wood used.
29	Ditto ...	Careya arborea ...	Dambel ...	Found everywhere, especially with sâl.
30	Lythrarieæ ...	Lagerstrœmia Reginæ ...	Bolashari ...	Only a few specimens seen.
31	Ditto ...	Ditto parviflora ...	Shida ...	Found everywhere.
32	Ditto ...	Duabanga sonneratoides ...	Bondorkella ...	
33	Datisceæ ...	Tetrameles nudiflora R. Br.	Bolong ...	Large tree; used for boats.
34	Rubiaceæ ...	Nanclea cordifolia Roxb ...	Shangdong ...	Used for boats; tree attains a good size.
35	Apocynaceæ ...	Hollarrhena anti-dysenteria	Madmandœ.	
36	Bignoniaceæ ...	Calosanthes Indica (?) ...	Kering.	
37	Ditto ...	Stereospermum chelonioides	Bolzel ...	Large tree, used for boats.
38	Verbenaceæ ...	Callicarpa arborea ...	Makanchi ...	Found everywhere.
39	Ditto ...	Vitex penduncularis Wall ...	Shelangri ...	Used for sugar-cane crushers and such like purposes.
40	Ditto ...	Gmelina arborea ...	Bolkobak ...	Wood used in house building.
41	Laurineœ ...	Tetranthera monopetala R.	Bolbek ...	Wood not used. (Leaves used for feeding the Muka silk-worm, but not in Garo Hills.)
42	Laurineœ ...	Beilschmiedia Roxburghü ...	Tapchi ...	Not used.
43	Euphorbiaceæ ...	Macaranga gummi flua ...	Chakro.	
44	Ditto ...	Briedelia retusa	Kashi ...	Wood sometimes used in house building.
45	Ditto ...	Emblica officinalis ...	Ambari ...	Found here and there.
46	Ditto ...	Bischoffia javanica ...	Bolzuru ...	Used for boats.
47	Urticaceæ ...	Artocarpus integrifolia ...	Teprong ...	Planted only.
48	Ditto ...	Fiscus elastica ...	Ranket ...	Only one seedling observed. The tree is supposed to exist in other parts of the hills.
49	Ditto ...	Fiscus Indica L. ...	Ditto ...	Not numerous.
50	.....	Ditto Laccifera Roxb. ...	Prab ...	A few specimens.
51	.....	Ditto Infectoria ...	Do. ...	
52	.....	Ditto Cordifolia Roxb. Rumphü D. C.	Do. ...	Numerous.
53	.....	Ditto Triloba Ham ...	Chrom ...	Only met one seedling.
54	.....	Ditto Hispida Lf. ...	Shakab ...	The edible fig.
55	Juglandaceæ ...	Engelhardtia spicata ...	Vakrü ...	Large tree; not used.
56	Cupuliferæ ...	Quercus lanceœfolia ...	Chauko ...	
57	Ditto ...	Ditto sp. (new) ...	Ditto ...	Besides these five species, there are probably others They are usually found near water-courses. The wood is very little used.
58	Ditto ...	Castanopsis hystrix D. C. ...	Ditto ...	
59	Ditto ...	Ditto Argentea D. C. ...	Ditto ...	
60	Ditto ...	Ditto sp. ...	Ditto ...	
61	.....	... ...	Dekumbi ...	Wood soft, sometimes used for paddles.
62	.....	... ...	Gornok.	
63	.....	... ...	Gambal ...	Pretty frequent; wood said to be used for rice pounderst
64	.....	... ...	Shilka ...	Used for boats.
65	.....	... ...	Rodia ...	Not used.
66	.....	... ...	Taeko ...	Fruit, which ripens in August, eaten.
67	.....	... ...	Kidar ...	Fine large tree; wood not used.
68	.....	... ...	Bolcheck ...	Not used.
69	.....	... ...	Bolbock ...	A tree resembling simul in general appearance; out of leave in December.
70	.....	... ...	Tætopa ...	Wood not used.
71	.....	... ...	Dongbeng ...	Very large tree; leaveless in December; wood not used
72	.....	... ...	Balsam pal ...	Not used.
73	.....	... ...	Kamkal ...	Ditto.
74	.....	... ...	Pagram ...	Bark used for manufacturing cloth.
75	.....	... ...	Dome ...	Resembles toon in appearance; wood not used.
76	.....	... ...	Rudeck ...	Very large troe, wood not used.
77	.....	... ...	Temisak ...	Not used.
78	.....	... ...	Vakrü ...	Large tree; not used.
79	Gramineæ ...	... ...	Wah ...	A great variety of bamboos are found all over the forests, and in large quantities.

CALCUTTA,
The 2nd January 1874.

W. SCHILCH,
Conservator of Forests, Bengal.

APPENDIX IV.

General description of the Sivok Hill Range, by J. S. GAMBLE, ESQ., B.A., *Assistant Conservator of Forests, Cooch Behar Division.*

1. *Area.*—The area of the Sivok Hill Range is as follows:—

Lower Hill forest	11·45	square miles.	(7328 acres).
Hill Savannah	4·55	square miles.	(2912 acres).
Total ...	16·	„	or 10240 acres.

2. *Boundaries and the properties with which they march.*—The range is bounded on the north by the crest of a ridge called Silimbong, stretching from Sittong Nita (7,000 feet) to the Teesta river; on the west by a continuation of the same ridge passing over Sittong to Letpanchar; on the east by the Teesta river, and on the south by the Sivok river.

3. *Topographical description.*—The tract consists entirely of hills with very steep and rugged cliffs, especially on the south face. It consists of two parts—

1*st.* The spurs and slopes coming down from the Sittong range of hills towards the south and east. 2*nd.* The Sivok Hills bounded by the Teesta, Sivok, and Ruyem rivers, and joining the Sittong ridge at the water-shed of the Sivok and Ruyem rivers.

The first part consists chiefly of tolerably gentle slopes, the upper parts being yearly joomed for cultivation by the Lepchas, and wherever abandoned showing merely a thicket of '*Artemisia*' '*Moesa*' and other worthless plants and shrubs, with perhaps occasionally stump-shoots of the old trees which have been cut down.

The second part is all forest—virgin forest,—which, beyond the cutting of sâl trees to a certain extent on the east and south slopes, has never been worked in any way. The southern face consists of a steep precipice with a few spurs narrow and steep, running off parallel to each other towards the Sivok river.

The chief *rivers* are—

1*st.* The *Teesta*, on the east boundary, always running but hardly navigable, although the natives occasionally take their light dug-out sâl canoes over the rapids. For timber which will float it is very good; but the difficulties of floating sâl and other heavy timber over the cataracts have been found very great. From the junction of the Teesta and Sivok rivers downwards, there are no difficulties in the way of floating.

2*nd.* The *Sivok* river, runs the whole year round, but has only during the rainy season sufficient water for floating.

3*rd.* The Ruyem river, which, with its numerous branches, drains the whole of the interior portion of the tract.

Of *roads* there is only one, which is now in course of construction, viz., that along the bank of the Teesta river. When this is finished, it will be possible to utilize it for the extraction of timber in scantlings.

4. The *soil* is sandy, being towards the south of tertiary sand stone, which is followed by a belt of carboniferous and then by schist rocks and slates.

The coal is good but not very pure, and is not found in sufficient quantity to be worth working. However, no one as yet has attempted to penetrate below the surface of the ground. 'Tufa' lime has been found in one or two of the small rivers running south, but not in very large quantity. The slates of the upper portion seem pure, but they do not split well. Mr. Mallet, of the geological survey, has explored this tract during the past cold season, and has given me some information on its geology.

5. *Description of forests as to species, age, and condition.*—It has been found impossible to divide this tract into different classes of forest except those of 'Lower Hills' and 'Savannah,' owing to the difference between the vegetation of the ridges and slopes, and that of the beds of the rivers.

The tops of the ridges of the Sivok Hills up to about 2,500 feet altitude are covered with dry forest, the chief tree being *sâl*, which is there found in its finest state; some very large specimens have been met with, but chiefly in out of the way parts, as lower down, the larger trees have mostly been cut out for timber supply.

The growth of the hill sâl appears to be rapid, and the young trees are exceedingly vigorous. In some parts they grow so thick together, as to be difficult to penetrate, and they invariably have fine straight stems.

With the *sâl* are found *saj*, cheloni, and katoos of large size; together with a few champ, wild mango, and most of the trees peculiar to sâl forest. The undergrowth is chiefly of a strong bamboo-like grass (*Erianthus sp.*) together with other grasses, such as *Apluda Saccharum* and *Pogonanthera.*

Small plants of the saj *(cinnamomum albiflorum)*, which is exported in considerable quantities, and of which trees between five and six feet girth have occasionally been seen, are very common; as also is the Hurdi (*Morinda lanceolata*) also an article of export.

The upper ridges are very steep, and are chiefly remarkable for the prevalence of two very rare palm trees the 'Katong' (*Wallichia disticha Tand*) and the schap. (*Phœnix rupicola Tand*). Both of these are very liable to be exterminated, as the Lepchas eat the centre of the stem of the one, and obtain a kind of sago from the other, as they do also from the Runghong (*Cargata urens*), found in the moist valleys and occasionally on the ridges. *Pandanus* is also common. In the hollows between the ridges, where the soil keeps damp, *toon* is found sometimes of large size, and here and there the India rubber tree (*Ficus elastica*). The slopes of the spurs are covered generally with a kind of moist evergreen forest of large trees, but with the exception of *toon*, a few *saj* and *cheloni*, the trees are not very valuable ones. We find, however, '*Artocarpus chaplasha*,' *Pongamia glabra*,' *Pterospermum acerifolium*,' *Populus ciliata*,' '*Quercus spicata*,'and an innumerable quantity of other species. The undergrowth is not generally dense, although it is composed in a great measure of canes, *calamus montanus Tand*,' '*Schizospathus griff*' being especially noticeable.

On the dryer southern slopes the ground is covered with a big bamboo (*Dendrocalamus sp*), and with it the common trees are, '*Bombax*,' '*Erythrina*,' '*Gmelina*,' '*Bauhinia variegata*,' *saj* and a few sâl.

The valleys of the small rivers contain the finest vegetation, and on proceeding up them we find a new delightful picture at every step. The principal trees are *Pani saj* (*Terminalia Myriopteron*), *toon*, *Katus*, (under this head we have counted both '*Castanea Indica*' and '*Castanopsis Roxburghii H. F. T.*) and with them are found '*Chalta*,' '*Hattipaila* '*Garcinia*' '*stipulata*,' '*Calophyllum polyanthum*,' '*Ulmus lanceæfolia*,' '*Meliosmia simplicifolia*' '*Talauma Hodysoni*,' &c., &c. The smaller trees are chiefly species of '*Homoroya*,' '*Citrus*,' '*Alsodeia*' '*Micromelum*,' '*Viburnum*,' '*Casearia*,' '*Cyclostemion*' '*Aporosa ;* while below them again we have canes of all sorts, the commonest being '*Calamus schigospatheus*' '*flagellum*' and *leptospadix ;* the dwarf *Areca gracilis*, the wild plantain ; two species of *Leea*, and a multitude of *Rubiaceæ*, *Piperaceæ*, &c.

Towards the Sivok river is a strip of level land, alternately moist and dry, and containing the trees of the Terai, such as *Sterculia villosa*, *Lagerstroemia parviflora*, *Bauhinia variegata*, *Terminalia chebula*, and *Belerica*, &c., &c.

But the chief tree and the most valuable is the India rubber, (*ficus elastica*). It is found chiefly along the beds of the rivers in a kind of sandy clay, very friable, but examples are met with occasionally on the slopes and even on the tops of the ridges.

It is commoner towards the east in the feeders of the Teesta, than to the south; and appears to be very local, as in some places a great many are found growing not far from each other, while in others in many days survey hardly one has been met with.

The upper ridges towards Sittong have been so much 'joomed' by the Lepchas, that their original vegetation is not easily made out; it appears, however, that toon existed in large quantities, with the oak, alder, birch, chestnut of the upper hills, and such trees, as the *Ostodes paniculata*, *Talauma Hodgsoni*, *Eugenia cerasifolia*, &c. For the list of the trees of the whole tract, reference must be made to the general list of Darjeeling trees, as this, tract contains specimens of almost all kinds.

6. *Timber Depôts.*—Of these there is only one, viz., Sivok at the junction of the Teesta and Sivok rivers, at the extreme south east corner of the tract.

7. *Timber Markets and large towns in the vicinity.*—From Sivok timber depôt, timber may either be floated down to Julpigoree by the Teesta river or carted to Silligori or other points on the Ganges Darjeeling road. There are few villages on the borders of the forest with the exception of Letpaucha, Lumbong, the coolies villages of the Government cinchona plantation, and Sivok.

8. *Lines of export.*—Down the Teesta river, to Julpigoree and the Brahmaputra, by road to Silligori.

9. *List of villages remaining within the forest boundaries, limits of each, and rights on the forests possessed by the inhabitants.*

These are: 1*st*, *Sivok*.—The forest house, a few shops and the lines of coolies employed by the Public Works Department on the Teesta valley road. Merely a very small area, the inhabitants have no cultivation and no rights whatever on the forests.

2*nd*.—The three villages of Lumbong, Lunkor, Kermoth, under Duli Sing, Lepcha Mundle. They are in the upper parts of the ridges, and very scattered.

There are 16 settlers who pay Re. 1 each per month to the Forest Department as rent.

Their cultivation is joom; they grow chiefly maize, murwa, (*Elensine coracana*), hill-rice, &c. Of the area under cultivation, and that spoilt by jooming, report will be made after closer inspection.

10. *Statement of rights possessed by the inhabitants of the surrounding districts in respect to grazing cattle, fuel, grass, bamboos, &c.*—None exist.

11. A map of the range on a scale of two inches to the mile has been prepared.

12. *Working plan.*—The materials necessary for a preliminary working-plan are: (1.) *Area of the different classes of forest*, this has been given under 1. (2.) *Amount of growing material*, see form 2 appended. (3.) *Rate of growth;* data as yet incomplete. It is hoped that some indications on this point will be soon be ready, as collections of sections of wood of the different trees are being made.

DARJEELING,
The 22*nd June* 1874.

J. S. GAMBLE, B.A.,
Assistant Conservator of Forests,
Cooch Behar Division.

APPENDIX V.

APP

FORM II.—*Statement showing the results of Forest Valuation Surveys in the Sivok Hill ran*

Number.	Position of Line of Survey.	Sal.											Saj.															Tree	
		I.	II.	III.	IV.	V.	VI.	VII.	VIII.	IX.	X.	XI.	I.	II.	III.	IV.	V.	VI.	VII.	VIII.	IX.	X.	XI.	XII.	XIII.	XIV.	XV.	I.	
		Under 1 cubit.	Between 1-2 cubits.	Between 2-3 cubits.	Between 3-4 cubits.	Between 4-5 cubits.	Between 5-6 cubits.	Between 6-7 cubits.	Between 7-8 cubits.	Between 8-9 cubits.	Between 9-10 cubits.	Between 10-11 cubits.	Under 1 cubit.	Between 1-2 cubits.	Between 2-3 cubits.	Between 3-4 cubits.	Between 4-5 cubits.	Between 5-6 cubits.	Between 6-7 cubits.	Between 7-8 cubits.	Between 8-9 cubits.	Between 9-10 cubits.	Between 10-11 cubits.	Between 11-12 cubits.	Between 12-13 cubits.	Between 13-14 cubits.	Between 14-15 cubits.	Under 1 cubit.	Between 1-2 cubits.
1	From a point on the Sivok river up the first ridge between the Teesta river and Chanwa Jhora, 7,530 feet.	5,790	106	66	43	20	8	3	2	1	...	...	2	11	12	13	10	6	4	...	2	1	...	...	...	...	...	26	34
2	Along the Chanwa Jhora from the Sivok river upwards; 6,600 feet.	20	3	4	...	...	...	..	...	...	...	..	6	3	8	6	1	4	2	...	...	...	...	...	...	...	...	2	...
3	From a point on the Sivok river up the second ridge between the Chanwa and Tanwa Jhoras, 4,770 feet.	3,161	86	44	18	4	1	1	...	1	...	...	1	2	2	7	5	2	...	1	...	...	...	...	...	...	...	19	37
4	Along the Tanwa Jhora from the Sivok river upwards, taking two branches— ft. Main stream ... ... 4,970 Branch No. 1 ... 2,620 „ „ 2 ... 710 8,300	201	15	9	3	...	...	...	...	...	...	...	44	8	7	6	5	3	...	1	...	...	...	1	...	...	...	...	1
5	From a point in the Sivok Jhora to the top of the main ridge of the Sivok Hills, thence down a long ridge between the Andari and Punderrh Jhoras to a point on the Ruyem Jhora, about 1 mile from its exit into the Teesta, 23,510 feet.	5,240	124	84	36	33	19	9	1	1	...	2	3	2	6	6	4	7	1	...	1	...	...	...	1	...	...	20	38
6	From the same point on the Sivok river as No. 5, through level forest and the base of the hills to meet the Sivok river again, 2,000 feet.	2	...	4	2	...	...	...	...	...	...	...	2	6	9	5	8	9	...	...	...	...	...	...	...	...	...	1	1
7	From where the Sivok river leaves the hills up a ridge meeting line No. 5, 4,420 feet.	1,680	72	65	42	16	13	6	3	1	...	...	2	3	2	8	5	2	...	...	...	...	...	...	...	...	...	3	7
8	From the edge of the Sissu forest (survey 1872-73) Sivok river to meet line No. 5, 3,060 feet.	1,720	63	25	15	6	4	...	...	...	...	...	3	3	6	3	1	2	...	...	...	...	...	...	...	...	...	12	21
9	Up the Golia Jhora from its entry into the Sivok river, main Jhora, and one small feeder. ft. Main Jhora ... ... 5,750 Branch 260 6,010	...	...	...	...	...	...	...	...	...	...	...	54	4	8	4	1	1	2	3	1	...	...	...	...	...	...	...	...
10	From point on Sivok river opposite corner of survey 1872-73, up ridge to a peak connected with main ridge of Sivok Hills, 4,900 feet.	810	26	18	17	11	6	3	4	...	...	...	3	7	5	3	2	1	...	...	...	...	...	...	...	...	...	2	5
11	From the junction of the Oongbong Jhora with the Teesta, to a point on ridge No. 1, 3,500 feet.	70	4	7	7	5	2	...	...	...	...	...	...	1	2	2	...	...	...	...	...	...	...	...	...	...	...	2	4
12	From the Teesta river up the Oongbong Jhora, and a ridge between two branches to meet No. 1 line, 3,500 feet.	...	...	...	...	...	...	...	...	...	...	...	3	7	5	2	3	1	2	...	...	...	...	...	...	...	...	...	2
13	From the point of junction of the Rungbheek Jhora with the Teesta, up the ridge to the Sivok leading to the main ridge of the Sivok Hills, and along the main ridge to a point on No. 5, 10,140 feet.	...	...	...	...	...	...	...	...	...	...	...	16	...	1	...	...	1	...	...	1	...	...	...	1	1	1	14	5

REMARKS.

1. At first, steep ascent with dry forest of Terai trees, arriving on top of the ridge sâl forest, very dense but not many large trees, with a few saj, cheloni, &c., sâl better higher up; then got on to very steep knife-edge with sâl rather stunted—slope got steeper until at last further progress was impossible.
2. Passed first through grass Terai jungle, then the damp-loving vegetation of the deep vallies with India-rubber trees, pani saj, &c., a few toon and champ. The Jhora at last ended at the foot of a precipice.
3. Passed first through patches of alternate dry and moist Terai forest, then ascended the ridge through rather damp forest arriving at last at the sâl, which was good, though it evidently had been worked.
4. Forest much resembling that of No. 2, except that it was rather dryer.
5. At first through bamboo forest with saj, &c., then into sâl forest, rather dense; afterwards sâl rather stunted, with small bamboos; then a small patch of damper jungle, then the steep slope and top of the main ridge katoos and *Quercus Spicata*. Proceeding down met several India-rubber trees, under growth of *Livistona* palm—then a small patch of sâl, and afterwards dense damp creeper-jungle with toon to top of a peak. Then proceeding down to the Ruyem river, good toon and cheloni, a few saj and India-rubber trees, ending in more creeper-forest.
6. At first fine forest of large trees, principally saj, chalta, hattipaila, *Almus lanceafolia*, &c., then on the lower slopes bamboos, with saj and a few toon; saj very good indeed, and fit for cutting, besides being easily accessible.

DIX V.

Area of lower hill forest 7,328 *acres*, (*total area of range*, 10,240).—*Season* 1873-74.

MEASURED.

Cheloni.								Katoos.								Toon.										Champ.							India-rubber.		Area of survey in acres.
III.	IV.	V.	VI.	VII.	VIII.	IX.	X.	I.	II.	III.	IV.	V.	VI.	VII.	VIII.	IX.	I.	II.	III.	IV.	V.	VI.	VII.	VIII.	IX.	X.	I.	II.	III.	IV.	V.	VI.	VII.	Mature.	Seedlings.	
Between 2-3 cubits.	Between 3-4 cubits.	Between 4-5 cubits.	Between 5-6 cubits.	Between 6-7 cubits.	Between 7-8 cubits.	Between 8-9 cubits.	Between 9-10 cubits.	Under 1 cubit.	Between 1-2 cubits.	Between 2-3 cubits.	Between 3-4 cubits.	Between 4-5 cubits.	Between 5-6 cubits.	Between 6-7 cubits.	Between 7-8 cubits.	Between 8-9 cubits.	Under 1 cubit.	Between 1-2 cubits.	Between 2-3 cubits.	Between 3-4 cubits.	Between 4-5 cubits.	Between 5-6 cubits.	Between 6-7 cubits.	Between 7-8 cubits.	Between 8-9 cubits.	Between 9-10 cubits.	Under 1 cubit.	Between 1-2 cubits.	Between 2-3 cubits.	Between 3-4 cubits.	Between 4-5 cubits.	Between 5-6 cubits.	Between 6-7 cubits.			
32	23	10	6	2	...	...	...	147	31	10	5	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	5	2	...	...	...	...	...	...	1	17·05
...	...	...	...	...	...	...	...	32	7	5	6	1	...	...	...	...	11	...	1	1	...	...	...	...	...	...	3	...	...	1	...	1	...	7	3	15·16
28	20	10	3	1	1	...	...	122	14	7	...	1	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	10·95
...	...	...	...	...	...	...	...	6	1	...	...	...	...	...	...	...	142	...	16	4	2	1	...	...	..	...	...	...	...	...	...	...	...	1	...	19·06
39	32	24	15	5	2	...	1	392	60	30	24	3	1	...	...	2	3	...	5	11	4	7	1	1	...	2	...	...	1	...	...	...	...	5	4	53·97
1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	4·59
9	10	1	...	...	...	...	...	5	...	...	...	...	...	...	...	...	1	...	...	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	10·15
14	13	4	3	...	...	...	...	52	4	...	...	...	...	...	...	...	1	1	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	7·02
...	...	...	...	...	...	...	...	1	1	...	...	...	...	...	...	...	20	5	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	13·79
6	2	1	...	...	...	...	...	4	...	2	...	...	...	...	...	...	...	...	1	2	...	...	...	...	...	...	...	...	1	1	...	...	...	...	...	11·25
2	2	1	...	...	...	...	...	51	7	6	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	8·04
...	2	...	...	...	...	...	...	3	6	2	1	...	...	...	...	...	4	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	8·04
3	...	1	...	...	...	...	...	20	3	2	...	1	...	...	1	...	8	3	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	15	3	23·05

REMARKS.

7. Slope more gentle than the parallel ridges. At first bamboo forest with saj, cheloni, then sâl forest, very good and of all ages to the point of junction with 5.
8. At first bamboo forest, crossed line 6 at 410 feet on top of ridge, sâl forest good.
9. Very winding course at first, damp forest of such places. Good Pani saj, on further, very steep sides, not much vegetation, many lamputtia, hattipaila, and a few toon. End in a precipice covered with *Phœnix* and *Wallichia* palms.
10. Very steep ridge in terraces, at first bamboo jungle as usual, then good sâl forest.
11. First up the side of the hill through a dense damp forest with chiefly big trees such as *Artocarpus, Chaplasha, Populus, Ciliata*, &c., on to the top of a ridge, then sâl forest to the end, which is rather steep.
12. Very steep Jhora with occasional big pools, vegetation damp, dense. Many *Garcinias, Populus*, &c.; ridge exceeding steep, scrub, with grass, *Pandaum*, and *Phœnix* palm.
13. At first through damp big-tree forest, then a few saj, then crossing a few streams India-rubber trees in good number. On top of main ridge a few toon and cheloni.

APPEN

Number.	Position of Line of Survey.	TREES																											
		Sal.											Saj.																
		I.	II.	III.	IV.	V.	VI.	VII.	VIII.	IX.	X.	XI.	I.	II.	III.	IV.	V.	VI.	VII.	VIII.	IX.	X.	XI.	XII.	XIII.	XIV.	XV.	I.	II.
		Under 1 cubit.	Between 1-2 cubits.	Between 2-3 cubits.	Between 3-4 cubits.	Between 4-5 cubits.	Between 5-6 cubits.	Between 6-7 cubits.	Between 7-8 cubits.	Between 8-9 cubits.	Between 9-10 cubits.	Between 10-11 cubits.	Under 1 cubit.	Between 1-2 cubits.	Between 2-3 cubits.	Between 3-4 cubits.	Between 4-5 cubits.	Between 5-6 cubits.	Between 6-7 cubits.	Between 7-8 cubits.	Between 8-9 cubits.	Between 9-10 cubits.	Between 10-11 cubits.	Between 11-12 cubits.	Between 12-13 cubits.	Between 13-14 cubits.	Between 14-15 cubits.	Under 1 cubit.	Between 1-2 cubits.
14	Up the Rungbheek Jhora from its junction with the Teesta meeting No. 13, 5,000 feet.	...	...	...	...	...	...	...	...	...	...	...	57	3	5	3	4	1	1	2	....	1	1	...	...	...	...	8	4
15	From a point on the Teesta close to the mouth of the Andari Jhora to top of ridge above Rungbheek Jhora, 4,300 feet.	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2
16	Up the Andari Jhora from its junction with the Teesta. The line was stopped by a large pool with perpendicular sides, impossible to pass on foot, 1,800 feet.	...	...	...	...	...	...	...	...	...	...	...	4	1	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...
17	From a point on the Teesta a little south of Ruyem Jhora to ridge between Andari and Punderrh Jhoras meeting No. 5, 4,480 feet.	...	...	...	...	...	...	...	...	...	...	...	...	2	1	1	...	...	...	...	1	...	...	...	...	...	...	...	1
18	Up the Ruyem river from its junction with the Teesta, 11,100 feet.	...	...	...	...	...	...	..	...	...	...	...	424	11	4	5	6	2	1	...	1	...	1	1	2	...	...	1	...
19	From the Ruyem river, along the Teesta valley road to Dridong Jhora, 6,400 feet.	9	20	12	5	...	...	...	...	...	...	...	1	1	...	...	....	...	...	...	...	...	...	...	...	...	...	15	23
20	Up the Dridong or Seetikhola (P.) Jhora from its junction with the Teesta, 9,000 feet.	...	...	...	...	...	...	...	...	...	...	...	64	4	14	10	13	13	9	5	4	1	1	...	1	1	1	3	3
21	From a point midway between Ruyem and Seetikhola Jhoras on the Teesta valley road along the Lepcha path to Kermott village, 6,900 feet.	...	...	...	1	5	1	1	...	...	...	...	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...	6	6
22	Down the second spur of the Kermott ridge, across the Lumbong Jhora and up the Lepcha path to Lumbong village; 6,300 feet.	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	1	...	...	1	2	6
	Total ...	18,713	519	338	189	100	54	23	10	4	...	2	690	77	99	84	70	55	22	12	11	3	3	3	5	2	3	136	202

REMARKS.

14. Very rocky, steep and slippery, pani saj and a few India-rubber with lamputtia trees, then damp forest with toon, katoos, &c.
15. First bamboo jungle with India-rubber trees, cheloni and katoos, on the ridge large katoos and *Quercus Spicata*.
16. Jhora very difficult to proceed along after crossing several pools with deep water and steep rocky sides, came to one impassible. A few saj and lamputtia, rocks covered with *Phœnix rupicola*.
17. Ridge very steep, with good toon, *Talanma Hodgsoni*, hattipaila katoos, plantains, canes, and large bamboos.
18. River broad, easy to ascend, many saj, a few India-rubber, *Engalhardtia* lamputtia, *Bassia latifolia*, *Am*, hattipaila and young toon. Banks in many places steep.
19. Through a level plateau of big bamboos, with a few sál, many cheloni, katoos, toon, champ, with trees of Terai such as seeda, tatri, gambari, &c., afterward moist forest with a few India-rubber.

DIX V.—(*Continued.*)

MEASURED.

Cheloni.								Katoos.								Toon.										Champ.							India-rubber.		Area of survey in acres.
III.	IV.	V.	VI.	VII.	VIII.	IX.	X.	I.	II.	III.	IV.	V.	VI.	VII.	VIII.	IX.	I.	II.	III.	IV.	V.	VI.	VII.	VIII.	IX.	X.	I.	II.	III.	IV.	V.	VI.	VII.	Mature.	Seedlings.	
Between 2-3 cubits.	Between 3-4 cubits.	Between 4-5 cubits.	Between 5-6 cubits.	Between 6-7 cubits.	Between 7-8 cubits.	Between 8-9 cubits.	Between 9-10 cubits.	Under 1 cubit.	Between 1-2 cubits.	Between 2-3 cubits.	Between 3-4 cubits.	Between 4-5 cubits.	Between 5-6 cubits.	Between 6-7 cubits.	Between 7-8 cubits.	Between 8-9 cubits.	Under 1 cubit.	Between 1-2 cubits.	Between 2-3 cubits.	Between 3-4 cubits.	Between 4-5 cubits.	Between 5-6 cubits.	Between 6-7 cubits.	Between 7-8 cubits.	Between 8-9 cubits.	Between 9-10 cubits.	Under 1 cubit.	Between 1-2 cubits.	Between 2-3 cubits.	Between 3-4 cubits.	Between 4-5 cubits.	Between 5-6 cubits.	Between 6-7 cubits.			
2	2	...	...	...	...	...	...	6	1	...	...	...	...	...	...	1	6	1	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	4	4	11·47
2	1	3	4	...	...	...	...	54	7	13	4	4	2	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	2	9·88
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	4·13
3	3	7	6	3	...	...	...	11	2	1	2	...	...	...	...	1	...	...	3	4	4	6	1	...	...	1	...	...	...	...	...	...	...	1	2	10·29
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	43	2	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	4	1	25·71
30	13	5	2	2	...	...	...	28	4	3	1	...	...	...	...	...	26	1	2	2	3	1	...	...	...	...	55	...	...	...	...	...	1	2	1	14·69
...	...	...	...	...	...	...	...	5	2	...	...	...	1	...	...	...	41	2	6	5	7	6	...	...	...	...	...	...	...	...	...	...	...	2	...	22·03
6	6	8	5	...	...	...	...	...	2	4	...	...	...	...	...	...	21	1	2	2	4	7	...	...	...	...	...	...	...	...	...	...	...	2	...	15·84
8	4	6	5	...	...	...	...	30	1	3	1	1	...	1	...	...	8	1	2	1	2	...	...	1	...	...	...	...	...	...	...	...	...	4	...	12·12
185	133	81	49	13	3	...	1	969	159	88	44	15	4	2	1	4	339	20	47	36	27	29	2	2	...	3	64	2	2	2	...	1	1	50	21	328·28

REMARKS.

20. At first damp forest, many lamputtia, *Garcinias*, Hattipaila, *Alnus Nepalensis;* higher up very good saj, many toon and India-rubber trees.

21. Passed first through the bamboo jungle on the small plateau with good toon, cheloni and some India-rubber trees, as well as trees of Terai. Then up a rocky path through a small patch of toon, &c., and a few sâl. Then through a small patch of old 'Joom' cultivation to a small sâl forest, after which all is under cultivation and the village is reached.

22. First ridge with bamboos, with toon, cheloni, &c., then damp forest with Engalhardtia, Garcinia, &c. Crossing the Jhora, a few large India-rubber trees with katoos and cheloni.

NOTE.—Saj contains 2 species ... { Saj *Terminalia tormentosa.* / Pani saj *Terminalia myriopteron.* | Katoos contains 2 species ... { *Castanea Indica.* / *Castanopsis Roxburghii.*

Contents of forest.

	Sâl.	Saj.	Cheloni.	Katoos.	Toon.	Champ.	India-rubber.
Young trees, 2-3 cubits	7,544	2,209	4,129	1,964	1,049	44	Mature 1,116*
Trees, 3-4 cubits	4,218	1,874	2,968	982	803	44	Seedlings 468
Old trees, above 4 cubits	4,307	4,218	3,281	580	1,406	44	.....
Total	16,069	8,301	10,378	3,526	3,258	132	1,584

* I am inclined to think this over the truth, as the trees grow very locally, and many of the survey lines passed through these localities.

J. S. GAMBLE.

DARJEELING, *The 30th June* 1874.

E. FUCHS,
Assistant Conservator of Forest.

APPENDIX VI.

FORM I.—*Statement showing the result of Forest Valuation Surveys in the Mooraghat Sâl forest.*
Area of sâl tracts valued, 2,992 acres. (Total area of reserve, 7,680 acres.) Season 1872-73.

No.	Position of Survey.	TREES MEASURED. Sal. I. Under 1 cubit.	Sal. II. 1 to 2 cubits.	Sal. III. 2 to 3 cubits.	Sal. IV. 3 to 4 cubits.	Sal. V. 4 to 5 cubits.	Cheloni. I. Under 1 cubits.	Cheloni. II. 1 to 2 cubits.	Cheloni. III 2 to 3 cubits.	Cheloni. IV. 3 to 4 cubits.	Area of survey in acres.
1	The surveys are marked on the map by red lines with figures corresponding with the current numbers.	134	105	41	2	...	...	...	...	...	4·08
2		189	93	29	...	...	...	...	...	...	4·53
3		387	192	50	2	...	...	...	...	...	9·83
4		276	112	33	...	...	...	1	...	...	9·22
5		346	157	36	...	...	...	...	...	...	8·10
6		688	403	126	4	...	1	3	7	...	18·41
7		407	189	112	5	...	1	...	1	...	10·89
8		252	104	66	...	..	...	...	...	...	10·28
9		139	132	54	4	...	...	...	...	...	4·78
10		250	138	29	2	...	1	2	1	...	6·29
11		460	340	186	13	...	1	1	2	1	19·57
12		392	158	66	7	...	...	3	3	...	11·36
13		240	150	83	20	...	...	4	2	...	13·18
14		394	218	54	4	...	1	3	...	...	16·41
15		706	279	116	20	...	17	8	4	3	20·68
16		769	336	75	6	1	4	2	...	...	21·04
17		392	148	104	12	...	3	3	2	5	11·91
18		708	288	106	8	...	..	..	...	...	19·59
	Total ...	7,129	3,542	1,366	109	1	29	30	22	9	220·15
	Per acre ...	32	16	6·20	0·50	0·005	0·13	0·14	0·10	0·04	.....

Contents of Forests.

	Sâl.	Cheloni.
Seedlings	95,744	389
Saplings	47,872	419
Young trees	18,550	299
Trees	1,496	120
Old trees	15	.....
Total ...	1,63,677	1,227
Less seedlings and saplings ...	20,061	419

(Sd.) W. R. FISHER
and
W. JOHNSTON,
Asst. Commrs. of Forests, Bengal.

APPENDIX VII.

FORM I.—*Statement showing the results of Forest Valuation Surveys in the Dainah Sissu Forest.*
Area = 1,133 *acres*
Season = 1872 73.

No.	Position of Survey.	TREES MEASURED. Sissu. I. Under 1 cubits.	Sissu. II. 1-2 cubits.	Sissu. III. 2-3 cubits.	Sissu. IV. 3-4 cubits.	Sissu. V. 4-5 cubits.	Sissu. VI. 5-6 cubits.	Area of survey in acre.
1	The surveys are marked in the map by red lines with figures corresponding with the current numbers.	8	47	29	6	3	.....	11·94
2		8	20	43	30	8	1	16·85
3		28	91	87	20	1	.....	25·15
	Total ...	44	158	159	56	12	1	53·94
	Per acre ...	0·80	2·93	2·95	1·04	0·22	0·019	.....

Contents of Forest.

	Sissu.
Seedlings	906
Saplings, ...	3,317
Young trees	3,339
Trees	1,177
Old trees	271
Total ...	9,010
Less seedlings and saplings ...	4,787

(Sd.) W. R. FISHER
and
W. JOHNSTON,
Asst. Commrs. of Forests, Bengal.

APPENDIX VIII.

Statement showing the results of an examination of the concentric rings of 40 Sâl trees in the Pantan reserve, Kamroop District, Assam.

No.	Average radius including sap-wood.	Average radius of heart wood.	Number of concentric rings on whole radius.	Heart wood only.	Number of concentric rings on radius including sap-wood.				Remarks.
					0—2·860″	0—5·73″	0—8·6″	0—11·5″	
				Trees grown on the hill.					
1	15·0	13·0	133	117	30	57	81	106	Sound.
2	12·5	11·2	129	113	37	61	89	127	Ditto.
3	11·8	10·5	138	116	36	64	98	133	Unsound at centre.
4	11·75	8·75	95	76	29	51	75	93	Ditto.
5	11·25	9·65	118	97	27	59	87	.....	Ditto.
6	11·	10·4	109	97	26	53	85	.....	Sound.
7	10·7	8·5	85	60	26	45	61	.....	Unsound at centre.
8	10·5	9·3	102	91	30	57	84	.....	Ditto.
9	10·5	9·1	109	96	31	57	87	.....	Sound.
10	10·3	8·7	113	92	33	65	91	.....	Ditto.
11	10·1	8·7	101	83	28	52	82	.....	Ditto, triangular.
12	10·	8·	81	65	26	49	69	.....	Ditto.
13	9·7	8·1	101	85	30	55	89	.....	Ditto.
14	9·5	·8	81	65	26	49	69	.....	Ditto.
15	9·3	7·8	97	78	29	56	87	.....	Unsound at centre.
16	9·	7·5	92	77	32	62	87	.....	Sound.
17	9·	7·6	101	82	35	58	85	.....	Ditto.
18	9·	7·5	79	64	27	57	76	.....	Ditto, very irregular.
19	8·8	6·3	75	55	24	50	73	.....	Ditto.
20	8·7	6·7	90	72	32	59	89	.....	Ditto.
21	8·6	7·3	85	70	30	57	85	.....	Ditto.
22	8·	·7	76	65	26	52	.....	.....	Ditto.
22	Total				650	1,225	1,729	459	
	Average				30	56	82	115	
				Trees grown in the plain.					
1	11·5	9·9	126	108	32	66	97	126	Unsound at centre.
2	9·5	8·5	99	83	30	59	87	.....	Sound.
3	9·2	7·8	99	79	32	62	89	.....	Ditto.
4	8·8	7·9	114	99	34	70	112	.....	Ditto.
5	8·4	7·2	95	75	28	59	.....	.....	Unsound.
6	8·3	6·7	96	71	29	60	.....	.....	Sound.
7	8·2	7·0	80	Unknown.	35	68	.....	.....	Ditto.
8	8·	6·5	78	63	24	54	.....	.....	Ditto.
9	8·	7·	108	90	32	60	.....	...	Ditto.
10	8·	6·6	112	92	42	83	.....	.....	Ditto.
11	7·9	6·4	79	59	26	55	.....	.....	Ditto.
12	7·9	6·4	98	78	36	72	.....	.....	Unsound at centre.
13	7·6	6·	86	69	30	61	.....	.....	Sound.
14	7·6	5·8	96	80	30	65	.....	.....	Ditto.
15	7·5	6·2	80	71	34	66	.....	.....	Ditto.
16	7·4	5·7	85	66	31	66	.....	.....	Ditto.
17	7·4	6·5	84	67	29	60	.....	.....	Ditto.
18	7·3	5·5	112	74	34	76	.....	.....	Ditto.
18	Total			.....	568	1,162	385	126	
	Average			.....	32	65	96	126	
40	Grand total			.....	1,218	2,387	2,114	585	
	Grand average			.....	30	60	85	117	

Kulsi Plantation,
The 1st October 1873.

W. R. Fisher,
Assistant Conservator of Forests, Assam.

APPENDIX IX.

Record of the Bamunpokree Plantation.

I.—General description of the Plantation Tract.

1*st.*—Area of Tract in acres.

a.—Area available for planting	1,300	0	0
b.—Area unfit for planting (the steep precipices—Pokri, river beds, &c.)	67	0	0
Total ..	1,367	0	0

2*nd.*—Boundaries.—*North.*—Mount Perrier, forest land belonging to the Kurseong and Darjeeling Tea Company.

East.—The Rakti river, separating from Selim Tea Estate.

South.—The boundary of the Darjeeling Hill Tract, separating from Pelkados Jot belonging to the estate of the late Mr. C. Barnes, and Garidura rice land belonging to Mr. Spencer.

West.—The Bansamali river, separating from the Punkabari Tea Company's land

3*rd.*—Topographical Description.—The narrow hill at the northern extremity has very steep sides to the east and west, and slopes down gradually to the south for some distance. There is then an elevated plateau with a gentle slope to the south, bordered by steep slopes down to the two rivers on the east and west. At the southern extremity is the Pokri or tank, a marshy pool now filled up with very long grass without any trees. This gives rise to the Bamun Jhora which runs first east, and then south to meet the Bansamali river.

The upper plateau terminates below the Pokri, in a steep hill leading down to the lower plateau, a gentle slope terminating in the Terai itself. The accompanying section will give a tolerable idea of the general lie of the land. On the western portion of the south boundary there is a precipitious ridge from the Bansamali river to the Bamun Jhora, and the banks of the Rakti river are also precipitious Thus the land may generally be described as consisting of two plateaus connected by a steep ridge, which on the east and west runs down to the boundary line. Above the upper plateau rises a steep hill running up to 2,000 feet altitude.

4*th.*—Geological description.—*Strata.*—Tertiary sands, and sandy clays.

Sub-soil.—Very deep, and lower plateau gravel and sand; on the section at the Rakti river fully 50 feet of homogeneous soil may be seen.

Soil.—Sandy loam with a very large admixture of 'Humus.' The upper plateau predominates in 'clay,' the lower in 'sand.'

5*th.*—Climate.—

a.—Average rain-fall ..	.. 150 inches.
b.—Annual mean temperature ..	.. About 75° but cannot be told till a proper record has been kept.
c.—Annual mean temperature of coldest month 65°	.. Mean of January and February, for which months record was kept at plantation, morning, noon, and evening.
d.—Highest temperature ..	.. About 95°
e.—Lowest „ ..	.. 50° lowest at 8 A.M. Probably 48 at sun-rise.
f.—Prevailing winds ..	.. W. and S. W.

The average rain-fall is that of Selim hill above Bamunpokree, communicated by Mr. Southby; it should be, if anything, rather less than this. It would be well worth while to put up a rain-gauge.

6*th.*—Vegetation.—The Hill to the north is covered with fine *sâl* and *cheloni*; the upper plateau with a very fine thickly grown forest, chiefly consisting of old *cheloni*, with *sida*, *kumbi*, *tatri*, a few *saj* and other trees of the following list:—

Cheloni ..	.. *Schima Wallichi*, old and big trees.
Saj ..	.. *Terminalia glabra (tomentosa)* a few chiefly of large size.
Seeda ..	.. *Lagerstroemia parviflora*, of very large size.
Tatri ..	.. *Dillenia Pentagyna*, big.
Koombi ..	.. *Careya arborea*, big.
Jamun ..	.. *Eugenia Jambolana.*
Amultas ..	.. *Cassia fistula*
Dudhali ..	.. *Holarrhena antidysenterica.*
Dudhkuri	.. „ *pubescens.*
Atcapali ..	.. *Wrightia mollissimo.*
Udal ..	.. *Sterculia villosa*, big.
Harra ..	.. *Terminalia chebula.*
Bahura ..	.. „ *Belerica.*
Dubdubbi	.. *Garuga pinnata.*
Simul ..	.. *Bombax Malabaricum*,
Toon ..	.. *Cedrela Toona* (very few.)

and many others.

The undergrowth is slight, chiefly consisting of creepers, such as *Bauhinia vahlii*, *Spatholobus setacens*, and *Dalbergia stipulata*, with a large coop of *Leea staphylea*, and *Leea robusta*, which die down in the cold weather. The slopes towards the east and west are chiefly covered with big bamboos, with the same species of trees as on the plateau; while in the valleys themselves we find *Terminalia myriopteron*, a huge tree; *Actinodaphne obovatum*, *Phœbe lanceolata* and other laurels; a few toon; *Dysoxylon*, two or three *sp*; and canes, chiefly *Calamus schizospathus*, and *leptospadix*.

The southern slope, between the upper and lower plateau, has evidently been formerly 'joomed' by Mechis; it is now covered with sâl forest, chiefly stump-shoots and trees of small size, though well grown with seeda, mahow, (*Kydia calycina*), "khair" (*Acacia ferruginea*),

Tatri, Koombi, Bahura, *Bhaila*, &c., with many wild plantains and long grasses, such as *Saccharum spontaneum*, *Apluda sp.*, *Antistheria arundinacea*; *Erianthus sp.*, and the fine bushy-growing tough-stemmed *Pogonanthera crinita*.

The lower plateau is young sâl forest, with many *Acacias* and *Albizzias* such as khair (*Acacia catechu*); khaur, (*Acacia ferruginea*); kunkur, (*Albizzia odoratissima*); kalâ siriss, (*Albizzia sirissa*); safed siriss, (*Albizzia Elata*); we also find sitsal, (*Dalbergia latifolia*) pretty common; and simul, koombi, tatri, taki, (*Bauhinia variegata*); koirahlo, (*B. malabarica*); goehlo, (*Callicarpa arborea*); harra, Bahura, mahow, bhayla (*Semecarpus anacardium*), with a few *Glochidion thomsoni*, *Elæodendron Roxburghii*, *Nauclea cordifolia*, &c., &c. The undergrowth consists chiefly of long grasses; *Antisthyria arundinacea*, *Androscepia gigantea*, *Saccharum spontaneum* *Apluda mitrea*, *Thysanoloena cymbopogon*, *Imperata arundinacea* with the thorny *Mimosa rubicantis*, *Clerodendron serratum*. *Buddleia*, *Desmodium sp.*; &c. It would probably be difficult to find a piece of land in the Darjeeling district as well bounded and defined which would give as good examples, not only of nearly the whole vegetation of the Terai and lower hills, but of the different classes of forest and their characters. A great part of the lower plateau and southern slopes above it was, until taken up for plantation in 1868, regularly cultivated by Mechis. This is abundantly seen by such traces as the castor-oil plant, which has been very difficult to eradicate in the nurseries; *edible cucurbitaceæ*, an occasional small jack or mango tree; and a few fleshy *Euphorbias*, which the Mechis are very fond of planting near their houses.

7th. Timber Markets.—(1) *for export.* Silligori, about 13 miles distant at the junction of the Balasun and Mahanuddy rivers can be reached either by road or by river. By the latter course the timber would be floated with the assistance of elephants, about 14 miles by the Rakti and Balasun rivers; then the country through which the Mahanuddy runs, down to the Ganges.

(2.) *For local use.*—Chiefly for the surrounding tea plantations, where the requirements are—

(1.) *Building timber.*—Sâl, cheloni, saj, sissu, champ.

(2.) *Tea boxes.*—Toon, Goguldhup (*Canarium bengalense*), Mahua (*Engelhardtia spicata*), Lamputtia (*Duabanga sonneratioides*), but most especially the first which is always used, if procurable, in preference to any other wood.

(3.) *Charcoal.*—Hard wood such as sâl, saj, sissu, kunkur, &c.

(4.) *Fire-wood.*—Any species, but the harder and dryer the better.

(5.) *Bamboos.*—For all purposes. Abundant on the lower plateau.

(6.) *Thatch grass.*—

As far as concerns Bamunpokree, there might be supplied—

(1.) *Sâl.*—A few large trees on the northern hills.

Cheloni.—A supply for many years on the upper plateau, more than sufficient for present demand.

Sissu.—Can be supplied from the neighbouring Government Forests of Rakti and Balasun.

Champ.—Much used for planking, can be procured from the Upper Hill forests (*Michelia excelsa*), or from the Lower Hills about the Mahanuddy River (*Michelia champaca*), would be worth planting.

2nd.—Toon.—The enormous demand for this wood is very far from being satisfied; the present plantations may, in the future, to a certain extent, meet the demand as far as regards the tea plantations in the immediate vicinity. The other woods may be obtained from the forests along the Lower Hills but they are, none of them, to be found in any very great quantity.

3rd, 4th.—This is chiefly supplied from the timber on the tea plantations themselves. The Bamunpokree forest and those surrounding it could supply a great deal, especially from the material taken out on the formation of plantations. Judging from appearance, there seems to be no doubt that most of the surrounding tea concerns will run out of timber and fire-wood within a short time.

5th.—There is a large supply on the Eastern and Western slopes.

6th.—A very large supply in the plantations.

The timber, &c., sold from Bamunpokree in 1873-74 was—

			Rs.	A.	P.	
Sâl	10	trees ...	100	0	0	
Cheloni	5	„ ...	52	0	0	
Toon	6	„ ...	72	0	0	
Bamboos	4,300	„ ...	43	0	0	
Canes	...	...	8	0	0	
Thatch grass	...	...	44	3	3	
Grazing fees	...	...	0	8	0	(now not allowed.)
Total revenue ...			319	11	3	

Estimated amount required per annum.—There will be a ready sale for all the material that can possibly be grown on the area.

Price of materials.

	Present.	Prospective for the next future.
Sal	1 Re. per cubic foot in log 10 Rs. per standing tree	Rs. 15
Saj	10 „	„ 10
Cheloni	10 „	„ 10
Toon	15 „	„ 20
Sissu	10 „	„ 10
Sitsal	12 „	„ 10
Goguldeep ...	10 „	„ 10
Others	6 „	„ 5
Bamboos... ...	1 Re. per 100	„ 2 per 100
Canes	4 Rs. per monthly ticket	„ 4 per 100
Grass	2 pie per load	2 pie per load.

But even these rates will have to be very much raised in the future as the terai is cleared, railways and roads made, and tea cultivation extended.

8*th.*—*Lines of export.*—(1.) Road from Pankabari to Silligori, passes close to the southern boundary. (2.) Rakti, Balasun, and Mahanuddy to the Ganges.

9*th.*—*Labor available.*—(1.) Paharias, coolies employed on tea estates come generally from the Nepal 'morung.' Dangos, from Sonthal Pergunnahs and Chota-Nagpore generally on special contract as tea plantation coolies. Bhooteas very rarely met in the terai.

Price of labor.

	A.	P.	
On the plantation the coolies are paid per day ...	3	6	per man.
Ditto ditto ditto ...	3	0	„ woman.
Ditto ditto ditto ...	2	6	„ child.

On the surrounding tea plantations the rates are Rs. 5-6-7, and even occasionally Rs. 8 (for superior work such as tea-making) per month, less Sundays or hat-days; each month, therefore, contains 25, 26, or 27 days, the daily rates being consequently annas 3-1, 3-8, 4-3, 4-11, respectively.

10*th.*—The map of the plantation is appended; scale 4 inches = 1 mile.

II.—General plan of operations.

1*st.*—*Formation of compartments and blocks.* The forest has been divided into five blocks for planting, as follows:—

Blocks I *and* II, on the lower plateau respectively east and west of the Bamun Jhora. It is impossible to make them of regular shape or the roads very regular, as some parts, especially of I, have already been planted and in irregular areas. A new disposition of the roads will allow of tolerably regular compartments being made. The base line will be that from the foresters house to the Rakti river. It will be crossed at right angle by a long road extending right up the plantation. This will be crossed again by another road, parallel to the base line, making six compartments to block I. Of these, compartment one, about half of two, and a portion of three have already been planted. The same base line prolonged westwards will give a base for laying out block II, which will then be divided into three compartments necessarily of irregular shape.

Blocks III, IV, *and* V, are formed out of the hill portion of the forest. Block III comprises a part of the upper plateau with the slopes to the south; block IV, the greater part of the upper plateau with the slopes on either side to the east and west; block V, the upper hill and its slopes. The arrangement of the compartments in these blocks may be left for future consideration. In block III, an area of six acres has been planted with teak and toon alternately.

In block I, compartment *i* is sub-divided into two sub-compartments *a* and *b*; compartment two into three, sub-compartments *a*, *b*, and *c*; and compartment three into two, namely *a* and *b*. Except in compartment one, the sub-compartments will disappear after a few years.

2*nd.*—*Area to be planted per year, and succession according to which the several compartments are to be planted.*—The area to be planted per year will depend on the size of the compartments, and it will vary from 30 and 50 acres; and if two compartments are planted in one year, from 60 and 100 acres.

Succession.	Compartments.	Area. A.	R.	P.
In 1875	I. 2. *c*.—	19	1	0
Ditto	I. 3. *b*.—	25	0	0
Total ...		44	1	0

Succession.	Compartments.	Area. A.	R.	P.
In 1876	... I. 4.	42	1	0
Ditto	... II. 1. *b.*	10	0	0
	Total ...	52	1	0
In 1877	... I. 5.	32	2	0
Ditto	... I. 6.	25	0	0
	Total	57	2	0
In 1878	... II. 2.	42	1	0
In 1879	... II. 3.	67	3	0

The rest may be left for future consideration.

If it be found practicable, however, the allotments of two years might be planted in one year, more or less, according to circumstances.

3rd.—Enumeration of trees to be planted.—Blocks I, II, and III, to be planted with teak and toon, and perhaps mahogany.

Bocks IV, and V, to be planted with toon, by cutting out useless trees and planting toon seedlings instead.

Description of method to be followed; Blocks I, II, and III.—Lines to be laid out 5 feet apart, and tallies made 5 feet apart in these, 1,742 tallies per acre.

Teak to be planted in every third tally of every line thus:—

+	0	0	+	0	0	+	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
+	0	0	+	0	0	+	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0

In this way there will be per acre—

Teak	193
Toon	1,549
Total	1,742

Seedlings to be raised in irrigated nursery beds early in the year, and transplanted during the year in the months of June and July, if possible. The toon seedlings to be always carefully shaded from the sun at first by thatch.

4th.—Estimated cost per acre during first three years.

(*a.*) *Purchase of land*—None.

(*b.*) *Working charges.*

	Rs.	A.	P.	Rs.	A.	P.
First years.—Cutting jungles—20 women at three annas each, doing 15 tans per day, will do one acre; cost...	.....			3	12	0
First hoeing—30 men at three annas six pie each, doing 10 tan per day, will do one acre	6	9	0	...	..	
Second hoeing—17 men at three annas six pie each, doing 18 tan per day, will do one acre	3	11	6			
Third hoeing—12 men at three annas six pie each, doing 25 tan per day, will do one acre	2	10	0	12	14	6
Transplanting—One acre holds 1,742 plants, each man doing say 150 plants per day or 12 per acre ...	.....			2	10	0
Nursery work, half an acre.						
Share per acre—Hoeing, 15 men at 10 tan per day Rs. 3-4-6; weeding, smoothing, and making beds, 30 men at 5 tan per day, Rs. 6-9, or per acre of plantation	0	5	3			
Seeds	1	4	0			
Tools	1	12	0			
Sowing, &c.	1	5	0	4	10	3
Total first year ...	.....			23	14	9
Second year.—Three *hoeings* at 25 tan, Rs. 2-10 each ...	.....			7	14	0
Transplanting.—Filling vacancies second year estimating 25 per cent. 435 plants, 3 men at three annas six pie	.....			0	10	6
Total second year ...	.....			8	8	6

		Rs. A. P.	Rs. A. P.
Third year.—One *hoeing* at 25 tan	.....		2 10 0
Transplanting.—10 per cent. vacancies 175 plants, 1¼ men at three annas six pie	.....		0 4 4
Total third year ...	.....		2 14 4
Total for first three years ...	.....		35 5 7
In round figures:—			
First year	.....		25 0 0
Second year	.....		10 0 0
Third year	.....		3 0 0
Incidental expenditure	.....		2 0 0
Total ...	.....		40 0 0
(*c.*) *Establishment.*			
One forester	.....		30 0 0
Two watchers at Rs. 8	.....		16 0 0
Per month ...	.....		46 0 0

or Rs. 552 per year.

As the forester will have charge of the Bamunpokree forest, Rs. 500 only should be put down against the plantation. If 50 acres are planted per year, the share per acre would be Rs. 10, and therefore—

Working charges	.....		40 0 0
Establishment	.....		10 0 0
Total per acre ...	.....		50 0 0

for the first three years.

J. S. GAMBLE, B.A.,
Assistant Conservator of Forests, Cooch Behar Division.

DARJEELING,
The 1st September 1874.

W. SCHLICH,
Conservator of Forests, Bengal.

MAP
OF
BAMUNPOKRI PLANTATION RESERVE

Scale 4 Inches = 1 Mile.

Surveyed by
J. SYKES GAMBLE
Asst. Comr. of Forests.
Cooch-Behar Dn.

Drawn by
Wm. JOHNSTON L. C. E.
Asst. Comr. of Forests.

TABLE OF CONTENTS.

No. of Block.	No. of Compartmt.	No. of Subo Compartmt.	A.	R.	P.	A.	R.	P.	A.	R.	P.
I	1	a	5	3	..						
		b	39	3	..	45	1	..			
	2	a	5	3	..						
		b	10	1	..						
		c	10	1	..	41	1	..			
	3	a	19	..	..						
		b	20	..	..	39	..	..			
	4	..	..	..	..	43	1	..			
	5	..	..	..	..	26	2	..			
	6	..	..	..	..	..	..	..	218	1	..
II	1	a	11	..	..						
		b	10	..	..	21	..	..			
	2	..	..	..	..	99	1	..			
	3	..	..	..	..	67	3	..	191	..	..
III	..	a	6	..	..						
IV	..	..	386	..	..	386	..	..	386	..	..
V	..	pond	13	..	..				200	..	..
	..	..	..	..	..	..	..	..	309	..	..
						Total			2367	1	..

Lithographed at the Surveyor General's Office, Calcutta, November 1874.

RESOLUTION.

AGRICULTURAL DEPARTMENT.

FORESTS.

Calcutta, the 21st January 1875.

READ—

The Progress Report of the Forest Administration of Bengal for the year 1873-74.

THE formation of Assam, including the districts of Goalpara, Cachar, and Sylhet, into an independent administration, having relieved the Government of Bengal of the charge of those territories, the present is the last report that will deal with the management of the forests of that province. The work of the Bengal Forest Department relates to the charge of the forests of the Cooch Behar and Chittagong Divisions. Steps have also been taken to bring a very extensive tract of forest land, 178 square miles, in the Palamow sub-district of the Chota Nagpore Division, under management. Also the forests of the Soonderbuns will probably be made over to the administration of the Conservator.

Inspection.

The forest tracts of Bengal have as yet been inspected to so small an extent, that it will be some years before the "reserves," which it may be found desirable to take under State management, can possibly be determined. The work is meanwhile progressing steadily, if slowly; and the Lieutenant-Governor is glad to observe that it has been arranged between the Deputy Commissioner of the Cooch Behar district and the Conservator of Forests, that the sâl tracts on the slopes east of the Teesta, which it has been intended for the last eight years to reserve, should be definitely marked off during the present cold season. The Lieutenant-Governor trusts that this promise will be fulfilled, the more so as Dr. Schlich reports that joom cultivation has so rapidly increased of late years in parts of this district, that no time should be lost in rescuing the forest from the destruction that will otherwise overtake it.

The examination of the Soonderbuns, which was commenced in 1872-73, was completed in the year under notice by Mr. A. L. Home; the tracts examined by that officer covering an area of nearly 1,100 square miles in the Jessore district. The Soonderbun forests are situated on the almost numberless islands that lie within the tidal waters of the Bay. Their general level being but from 1 to 2 feet above high-water mark, the forests are inundated at spring tide only. The main rivers that flow through this low lying delta are connected by creeks that form the islands on which the forests grow. The soil is composed of sand and decaying vegetation; the climate pleasant from November to March; but the whole tract is very unhealthy at all times. The forests are closed during the monsoon, owing to the danger of the navigation, and would yield nothing but firewood, but that upon piercing the outer edge of the islands they are found to be covered with a valuable and quick-growing timber known as sundri, of which the supply appears to be inexhaustible. The sundri is estimated, it seems, to attain its full growth in 25 to 30 years. The trees grow up very close together to a height of 40 to 50 feet, with a straight bole of 18 to 30, and occasionally 35 feet, without a branch, and with a girth from $4\frac{1}{2}$ to $6\frac{1}{2}$ feet. The forests are extensively worked for firewood and timber by native boatmen, who carry the produce of their cuttings to numerous markets in the districts of Backergunge, Jessore, and the 24-Pergunnahs, where the timber is bought up

by the mahajuns mainly for boat-building, the craft finding their way eventually to Calcutta. The question of deriving a revenue from these forests is beset with special difficulties. The subject is under consideration, however, but the final decision of Government will be postponed until the Conservator himself has inspected the tract in the present cold season. A trial is meanwhile being made of the sundri timber for railway sleepers on the North Bengal Railway, now under construction.

In Chittagong, the Assistant Conservator has inspected a fresh tract of forest on the Naaf, in the extreme south of the Division, where a very active trade in boat-building is carried on; but the Commissioner of the Division thinks that the proposals that have been made in connection with this inspection should stand over for the present, pending the proposed transfer of the Cox's Bazar sub-division to Arracan; and the Lieutenant-Governor approves of this suggestion. The Assistant Conservator has not attempted any inspection of the forests in the Lushai or Fenny country during the year, for fear of complications with the tribes; and in view of the Deputy Commissioner's report, that no trade in timber can reasonably be looked for therewith, His Honor directs that such inspection should be foregone for the present.

Reserves.

In Assam, 429 square miles of forest in the Eastern Dooars were declared "open forests" during the year. The general character of these forests was briefly described in the Government Resolution of 31st March last on the Forest Report of 1872-73; and paragraphs 30 to 39 of the present report furnish much interesting information concerning them, which more immediately interests, however, the administration of Assam. The same remark applies to the valuable and extensive forests described by Dr. Schlich (paragraphs 41 to 49) on the Garo Hills, and in the other districts of Assam referred to in paragraphs 51 to 56.

The Lieutenant-Governor is glad to observe that steady progress has been made during the year in the formation of "reserves" in the Cooch Behar Division. The first steps in this direction were the surveying and mapping of the Mahanuddy terai range, to ascertain its probable yield of sâl, khair, and sissu timber; while an inspection of the Sivok Hill Tract has shown the existence of extensive slopes covered with a luxuriant growth of valuable and mature timber of several kinds. The Conservator remarks that the *Ficus Elastica* grows perhaps more luxuriantly in this tract than in any other part of the Darjeeling district; and if plantations of rubber are to be formed in Cooch Behar, the Sivok lower range should, it would seem, be chosen as their site. In the Western Dooars (Julpigoree), the *Muraghat sâl forest*, 12 square miles in extent, and the *Dainah sissu forest*, of nearly two, were declared reserved forests during the year; and in addition to these reserves, the *Buxa plain forest*, with an area of 158 square miles, of which about one-half is covered with sâl, was examined and mapped during the year. The two former tracts will require five to ten years' rest, and in the meantime must be protected from fire, cutting, grazing, and cultivation. The Buxa forest, on the other hand, is found capable of at once yielding 5,000 sâl trees a year—an outturn that may, it is affirmed, be doubled and trebled under proper conservancy in future years. Arrangements have been made for working this forest at once, and sanction has been accorded, since the present report was received, for the purchase of elephants for the purpose.

The Lieutenant-Governor is glad to observe that the Palamow forests, comprising an area of 178 square miles, as already noticed, are to be brought under management. The necessary establishment has been sanctioned for the purpose, and the reserves will, it is hoped, be demarcated during the present cold season.

In the Chittagong Division, it is not yet decided whether reserves should be formed or not, some difficulties attending the question of their formation. The Conservator of Forests is to visit the Chittagong Division during the present

season, and the Lieutenant-Governor defers the expression of any opinion upon the subject until Dr. Schlich's report is in his hands, the submission of which, he trusts, will not be delayed. The question of forest rules for this division is in the meantime also in abeyance.

His Honor notices with satisfaction Dr. Schlich's statement that in the course of another year or two measures for the protection and management of all the "reserves" above described will be in full working order, under the re-organization and enlargement of the establishments recently sanctioned by the Government of India.

Plantations.

In the way of plantations, the chief efforts of the department have been directed hitherto to the propagation of teak and India-rubber. Dr. Schlich asserts that we have been attempting to grow the former in cold and damp climates beyond the natural limits of its growth, and the latter in a manner different from that of nature; the result being that much money has been spent with very poor results. The question of the growth of rubber is practically transferred to the administration of Assam, as it is in the districts of that province that the *caoutchouc* tracts chiefly lie. Concerning the growth of teak, Dr. Schlich appears to be of the opinion that while the tree may be grown all over Bengal, it is doubtful whether the hope of obtaining fine teak even from the Sikkim Terai is well founded; and as to Upper Assam, he questions whether teak will thrive there at all. The last year has brought the department, he says, some new and discouraging experiences with reference to teak, in the appearance of a borer on the Kulsi plantations, and the total failure of the Burmah seed sown at Bamunpokree even to germinate. The experiment is of too much moment to be lightly abandoned, and must be persevered with under such changes as the Conservator deems necessary. Plantations of *toon*, it is satisfactory to note, are meanwhile reported to spring up like grass, and the young trees to stand transplanting well.

Dr. Schlich's report contains some interesting remarks (paragraphs 154 to 157) on the general question of the growth of rubber; but as His Honor has recently reviewed the subject in Resolution of 17th June 1874, he will not discuss it here.

A more important matter, in so far as Bengal is concerned, is the now acknowledged fact that mahogany grows well in the Bengal plains. Dr. Schlich tells us that during the rains of 1873 some seedlings were planted at Bamunpokree which grew very little during that year, but have made a wonderful start since the rains of the present season set in. The Lieutenant-Governor attaches much importance to the adoption of adequate measures for extending the growth of this valuable timber in the province, and commends the question to the Conservator's special attention. Mahogany, it is true, is a somewhat slow-growing tree, and we must be content to sow the seeds of a harvest to be reaped two generations hence.

Yield.

Concerning the yield of the forests in the Cooch Behar Division, the Conservator remarks that owing to large quantities of timber having been felled in former years and left lying in the forest, although shown in the books as lying in so-called depôts, the department is still occupied with the sale and clearance of these old cuttings, at prices generally much below the rates at which they are entered in the stock accounts. In Chittagong, the yield of the year was 2,759 tons of timber, against 2,164 tons in 1872-73 and 1,518 tons in 1871-72. A doubt is expressed, however, as to whether this increase is matter of congratulation or not; the increase consisting mainly of timber converted by scooping into dug-outs, causing, it is asserted, a wasteful expenditure of forest. His Honor has no doubt that the question will receive Dr. Schlich's attention on his visit to the district.

Revenue.

The revenue and expenditure of the year having been already reviewed by His Honor in Resolution of 17th November 1874, on the forest estimates of the year, it is sufficient simply to remark in this place that the total revenue of the year 1873-74 amounted to Rs. 1,79,366, against an expenditure of Rs. 1,37,498. The figures, of course, show that this important department is as yet in its infancy; but the Lieutenant-Governor is glad to recognise the earnestness of purpose and the great professional skill with which it is superintended by Dr. Schlich and Mr. Mann (Assam), to whom, and to the general staff of the department, the thanks of the Government are due for their labours in the past year.

By order of the Lieutenant-Governor of Bengal,

R. KNIGHT,

Asst. Secy. to the Govt. of Bengal.

No. 214.

COPY forwarded to the Conservator of Forests for information.

No. 215.

COPY, with 350 copies of the report, submitted to the Secretary to the Government of India, in the Department of Revenue, Agriculture, and Commerce.

No. 216.

COPY, with copy of the report, forwarded to the Secretary to the Chief Commissioner of Assam; to the Commissioners of Cooch Behar, Chittagong, Chota Nagpore, Bhagulpore, Dacca, and the Presidency Divisions; also to the Collector or Deputy Commissioner of each district of the Cooch Behar, Chota Nagpore, and Chittagong Divisions, and of the Sonthal Pergunnahs.

By order of the Lieutenant-Governor of Bengal,

R. KNIGHT,

Asst. Secy. to the Govt. of Bengal.

CALCUTTA,
The 21st January 1875.

No. 345, dated the 20th March 1875.

From—A. O. HUME, Esq., C.B., *Secretary to the Government of India,*

To—*The Secretary to the Government of Bengal.*

I AM directed to acknowledge the receipt of your communication No. 215, dated 21st January last, forwarding the annual report of the Forest Department in Bengal for 1873-74, together with a review thereof by His Honour the Lieutenant-Governor, and to observe that the report gives evidence of steady progress in the systematic examination of the forests under the control of the Forest Department and in the demarcation of the reserves.

2. As regards the final demarcation of those areas which will eventually form the forest domains of the State in Bengal and Assam, and to which the inhabitants of a large portion of the open country of the lower provinces must in future mainly look for their supplies of timber and forest produce, it is satisfactory to notice that during the year under review, the area has been increased from 320¼ to 437 square miles, of which 120 are in the Cooch Behar Division, and 317 in Assam. It is understood that these forests have been placed under the operation of sections 7 to 12 of the Forest Rules for Bengal.

3. In the Darjeeling District of the Cooch Behar Division, this area is stated to include 75 square miles of hill forests in Sikkim, and 31 square miles of Terai and lower hill forest, within which area is comprised the Mahanuddy Terai forest with 8,400, and the Sivok hill tract, adjoining the former to the north, with 10,240 acres. Of these two ranges detailed valuation surveys have been made; those of the Mahanuddy range are recorded in the report for 1872-73, and those of the Sivok hill tract in the report now under review. The descriptive account and record of valuation surveys of the former was noticed with approval in the orders* on last year's report; the further progress now recorded in the systematic examination of these forest tracts is considered very satisfactory, and His Excellency the Governor General in Council desires that the attention of Conservators of Forests in all provinces should now be directed to these important documents. The method of linear valuation surveys which appears mainly to have been employed may not be found applicable in all cases, but the descriptive account of the ranges, and the Conservator's remarks embodying the results of the examination, and the conclusions drawn from it regarding the preliminary plan of working these forests, may serve as models for similar work in other provinces.

* No. 340, dated 1st April 1874.

4. It is likewise satisfactory that it has been found possible to construct maps of all forest ranges that have been examined. The map of the Mahanuddy range on a scale of two inches to the mile was published in last year's report. For forests like these in which protection will be the principal work for a series of years to come, and which are only to be worked sparingly, maps of this description giving the boundaries of the forests and the principal topographical features, together with the limits of the different classes of forests, and the lines of the forest valuation surveys, will probably in most cases be found to meet all present requirements. The attention of the Superintendent of Forest Surveys will be especially directed to them, and Captain Bailey will be requested to place himself in direct communication with the Conservator of Forests, with the view of obtaining information regarding the construction of these maps, together with copies of those which have not already been published. The same remarks apply to the descriptive account of the Muraghat sâl and the Dainah sissu forest in the Jalpaiguri District, aggregating 13¾ square miles, which make up the remaining area of the reserves in the Cooch Behar Division.

5. Altogether it appears from this and last year's report, that in Bengal the reserves hitherto demarcated in the Terai and lower hills contain the following areas of sâl and sissu-producing forests :—

		Sâl.	Sissu and Khair.
Mahanuddy...	...	... 4,705 acres.	895 acres.
Sivok hill tract	...	... 7,328 „	...
Muraghat ...	...	... 2,992 „	...
Dainah ...	...	... ...	1,133 „
	Total	... 15,025 acres.	2,028 acres.

The rest of the reserves is savannah or mixed forest without sâl or sissu. This is as yet a very small area for the production of two of the most valuable kinds of timber for export to the plains, and the Governor General in Council concurs with His Honour in considering it most desirable that the sâl forests in the plains of the Western Duars, and on the hills east of the Teesta River in the Dumsong sub-district, should be demarcated as speedily as possible. This will considerably increase the area under Government control capable of supplying sál; but I am directed to enquire whether there are no other sâl and sissu-producing tracts in the Cooch Behar Division which might be included within the limits of the reserves. In a future annual report the Conservator might state his views regarding the prospects of the future supply of sâl and sissu from the Sub-Himalayan forests of Bengal as far as the data at his disposal may permit.

6. So much seems clear already from the two first reports submitted by Dr. Schlich that the present annual yield of sâl and sissu will be small, and that the increase of the supply in future will entirely depend upon the measures now taken to increase the productiveness of the forests. Under these circumstances, a strictly conservative management of these forests is evidently necessary, and this, I am directed to add, seems indicated on other grounds also. The Conservator is justly anxious to protect the sâl forests against fires, and the attempts made in this direction and reported in paragraphs 87 to 95 of his report are most praiseworthy. The exertions made by the Bengal Forest Officers in this direction have not however produced any corresponding results, and the failures recorded are justly attributed by the Conservator to the immense height and density of the grass in the sâl forest. On the other hand, it is evident from several passages in the report that in those places where the forest is better stocked, and where the cover overhead is dense, the grass is less, and in places has disappeared altogether. The Conservator might be invited to consider whether the work of suppressing fires would not be materially aided by restricting all cuttings to the utmost, and by confining them to those places where the cover overhead is dense, and there is no fear of the grass so much encroaching as to render fire suppression difficult. It is noticed with satisfaction that the maximum annual yield of these sâl and sissu forests has been assessed on the ground of definite data, and that it has been placed at a low figure.

	Area.	Maximum yield at present.
1. Mahanuddy Range, sâl ...	... 4,705 acres.	250 tons sál.
„ sissu ...	... 895 „	25 „ sissu.
2. Sivok hill tract, sâl and mixed	... 7,328 „	180 „ sál, saj, cheloni, katas, tun.
3. Muraghat sâl ...	... 2,992 „	*none.*
4. Dainah sissu ...	... 1,132 „	*none.*
5. Buxa plain forest sâl ...	... 48,000 „	5,000 „ sál

The Governor General in Council is ready to acknowledge that a certain quantity of timber must be cut in the reserves at present in order to meet urgent demands, and he feels assured that the selection of the trees to be cut will be regulated by the same care in detail which the Conservator has bestowed upon the determination of the maximum annual yield of these forest tracts, nor is it intended to say more at present than to urge the necessity of cutting as sparingly as possible during the next few years. With regard to the Mahanuddy range, the Conservator himself says that the best plan would be to suspend cuttings in the sál forests for about ten years. It should be considered whether in this case at least present requirements ought not to give way to a due regard for the future yield of the forests.

7. In Assam, four reserves, aggregating 46 square miles, contain sál; the rest, aggregating 271 square miles, are in the evergreen and mixed forest. The descriptive account of the Assam reserves is as clear and full as of those in Bengal, and Mr. Mann will do well to continue the system initiated by Dr. Schlich. The attention of His Excellency in Council has been specially drawn to the account given of the sál forests in the Eastern Duars. According to Dr. Schlich's account, the Ripu, Chirung and Sidli forests form one great block, containing about 80 square miles of sâl forest, which however is in danger of being destroyed by the extension of cultivation. The Chief Commissioner of Assam will be requested specially to report whether it is practicable to place the remainder of this forest on the footing of a reserve.

8. The attempt made to ascertain the rate of growth of the sâl tree in a forest of Assam by counting what are supposed to be annual rings, as recorded in paragraph 77 of the report, is an important step in advance. These countings of concentric rings, if confirmed by the examination of trees of known age, and by continuous periodical measurements of standing trees, will place the working of sâl forests upon a safe footing, and will guide foresters in charge of sâl forests in other provinces in the institution of similar researches. Meanwhile it is satisfactory that the Conservator has been able to base an assumed rate of growth upon the results obtained, and that the maximum annual yield of several ranges has been determined by these data.

9. In that section of the report which is devoted to the subject of plantations, the most satisfactory portion is the record of the Bamun Pokree plantation, which, with such modifications as may be needed, may serve as a model for plantation records in other provinces. These operations cannot succeed unless they are conducted in accordance with a detailed and well-considered plan, and this plan once decided upon, it is evident that it should be adhered to as closely as the gradually increasing experience and other circumstances may permit, and that no interference with the arrangements made, least of all during the working season, should be permitted.

10. Regarding the cultivation of the *Ficus elastica*, much experience has yet to be collected before plantations of this important tree shall have emerged from the stage of first experiment, and before it will be right to form *caoutchouc* plantations on a large scale, and to spend considerable amounts upon them. As His Honour observes, it is mainly in Assam that these experiments should be continued, and Mr. Mann should in his proceedings give due weight to the views expressed by Dr. Schlich in paragraphs 154 to 157 of the present report.

11. Regarding the experimental cultivation of teak, not much requires to be added to what has been said on the subject in the orders on last year's report. These teak plantations must be regarded as experimental; they should be continued in a few places only where constant supervision is possible, and whenever practicable teak should not be planted pure, but mixed with other trees the success of which is assured.

12. In the present state of forest administration in Bengal, the financial results of the year are of secondary importance. What is required in the first instance is to demarcate the Government Forests under the control of the Forest Department, to define or commute any adverse rights or privileges of third parties with which they may be burdened, and to collect such statistical data regarding their capabilities as are required to regulate their working. These objects, together with the needful protection of the forests and the experimental plantations, cannot be attained without considerable outlay, and it is satisfactory that nevertheless forest administration both in Bengal and in Assam has paid its way during the year. It is however noticed from the Conservator's remarks that this is entirely due to the revenue yielded by those divisions (Chittagong and Dacca) in which no conservancy measures have been adopted. In all other divisions the outlay of the year exceeds the revenue. The figures given in the report do not accord with those entered under actuals in the budget, and it is presumed that the figures of the last-named document, which was scrutinized by the Accountant-General, are correct. In the following statement the figures of the report and budget are placed side by side :—

BENGAL.

	Budget.	Report.
	Rs.	Rs.
Receipts	1,16,633	1,23,732
Charges	85,488	91,676
Surplus ...	31,145	32,056

ASSAM.

Receipts	62,726	55,634
Charges	50,622	45,822
Surplus ...	12,104	9,812

13. Attention has been directed to the remarks in paragraphs 160 and 161 of the report regarding the stock in hand shewn in the books as lying at forest depôts, but which in reality is lying scattered all over the forests, being in many cases simply trees left at the spot where they were felled. To enter such material as stock at depôts and to shew it as such in the timber accounts is irregular, and the practice must at once be put a stop to. The valuation of stock at depôts at the commencement and close of the year should only include such timber as is ready for sale and has been collected at the main depôts which will commonly be the sale depôts. Under this arrangement the opening balance of timber on hand at the commencement of the current year will be less than the closing balance of last year, but, provided the difference is fully explained, this will not interfere with the continuity of the timber accounts.

14. His Excellency the Governor General in Council gladly endorses the Lieutenant-Governor's commendation of the services rendered by Dr. Schlich and Mr. G. Mann during the year under review. It is a source of satisfaction to observe from Dr. Schlich's two reports that the work of forest administration in Bengal is now conducted in a truly scientific spirit, and that it is intended to regulate all operations by system and method. The attention paid to the identification of the different species of trees which compose these rich and varied forests is praiseworthy, and His Excellency in Council is glad to see that ready assistance has been rendered in this respect by Mr. Sulpiz Kurz, the Curator of the Herbarium at the Royal Gardens, Calcutta. A copy of the report and of the present orders should be communicated to that officer.

NORTH-WESTERN PROVINCES
ANNUAL PROGRESS REPORT
OF
FOREST ADMINISTRATION

FOR THE YEAR 1873-74.

By G. Greig, Esq.,

Conservator of Forests, N.-W. Provinces.

STATISTICAL DATA AND FOREST LEGISLATION.

INTRODUCTION. **Statistical data.**—The statistical area of the Province is so well described in the Report on the Administration of the North-Western Provinces for the year 1872-73, that I cannot do better than borrow from it.

2. The territories under the administration of the Government of the North-Western Provinces lie between 23° 51′ 30″ (Mirzapore) and 31° 5′ 30″ (British Gurhwal) north latitude, and 77° 3′ 45″ (Moozuffernuggur) and 84° 43′ 30″ (Ghazeepore) east longitude. They comprise an area of nearly 82,000 square miles, exclusive of native territory.

3. The Province is bounded on the north by the Native State of Tehree or Gurhwal, Thibet, Oudh, the Nepalese Terai, and the Chumparun District of Lower Bengal; on the east by the Behar Division of the Lower Provinces; on the south by the Chota Nagpore Division of the Lower Provinces, the Rewa State, the Native States of Bundelkhund, and the Saugor Division of the Central Provinces; on the west by the Native States of Gwalior, Dholepore and Bhurtpore, the District of Goorgaon in the Punjab, and the river Jumna up to its confluence with the Tonse, beyond which point the latter stream forms the boundary separating the North-Western Provinces from the Native States of Sirmoor and Jubal.

4. The Himalayan tracts under the Government of these Provinces consist of the Districts of Kumaon and Gurhwal, and the tract to the west of Mussoorie, known as Jounsar Bawur, adjoining the hill station of Chukrata.

Immediately between these two districts lies the Native State of Tehree (or Gurhwal).

5. The principal river is the Ganges, flowing with a south-easterly course through these Provinces, from its source in the mountains of native Gurhwal to its junction with the Ghogra in the south of the Ghazeepore District. It receives numerous affluents on its left bank, such as the Ramgunga, Goomtee and Ghogra. The principal towns along its banks are Anoopshuhur, Futtehgurh, Cawnpore, Allahabad, Mirzapore, Benares, and Ghazeepore.

The Jumna also rises in native Gurhwal to the west of the Ganges, and taking at first a south-westerly course, enters the Dehra Doon near Kalsee, where it is joined by the Tonse. Hence it flows for nearly two-thirds of its course in almost the same direction as the Ganges, until it meets with the outlying spurs of the Bundelkhund ranges, and turns at first gradually, and then abruptly, more and more towards the east, until at length it unites with the Ganges at Allahabad.

The principal towns on this river are Delhi, Muttra, Agra, and Calpee on the right bank, and Etawah and Allahabad on the left bank.

6. The East Indian Railway runs through the middle of these Provinces from the Ghazeepore District to the city of Delhi, a distance of 534 miles. At Ghazeeabad the Scinde, Punjab, and Delhi Railway comes on the line through Meerut and Seharunpore to the Punjab, a distance of 123 miles.

From Allahabad a line to Jubbulpore connects the East Indian Railway with the Great Indian Peninsular Railway to Bombay, and those of Western India.

The Oudh and Rohilkhund Railways join the East Indian Railways at these points—*first*, the Jounpore and Fyzabad line at Benares ; *second*, the Cawnpore line to Lucknow, and thence through Shahjehanpore to Bareilly ; *third*, the Allygurh line to Bareilly, with a branch line to Moradabad. The State Railway from Agra by Bhurtpore joins the Rajpootana State Railway through Jeypore to Delhi.

7. The total area of the North-Western Provinces is 81,402 miles and 529 acres, as follows :—

	Miles.	*Acres.*
Cultivated area	... 42,173	206
Culturable waste	... 12,108	313
Unculturable waste and forest land ...	... 27,121	10

The area of land under charge of the Forest Department (included in this 27,121 miles 10 acres) is, as near as can be calculated, 2,536 square miles.

8. According to the census of 1872 the population of these Provinces numbered 30,769,056 souls, inhabiting 6,359,092 houses, as follows :—

Male adults	... 9,907,530
Female adults	... 9,091,079
Boys of 15 years of age and under ...	... 6,499,306
Girls ditto ditto	... 5,271,141

Classified according to occupation, the population is divided as follows :—

Landowners	... 2,045,940
Agriculturists other than landowners ...	... 15,330,027
Pursuing avocations not connected with agriculture	... 13,387,580

These figures do not exactly tally with the "Total Population," but they are quite near enough for all practical purposes.

9. The North-Western Provinces are divided into seven administrative divisions, each under the superintendence of a Commissioner, as follows :—

Meerut, Agra, Rohilkhund, Allahabad, Benares, Jhansie, and Kumaon.

10. **Meerut Division.**—The Meerut Division is divided into six districts, each one being under charge of a Magistrate-Collector.

The districts are : Dehra, Seharunpore, Moozuffernuggur, Meerut, Boolundshuhur, and Allygurh.

In the two first named districts, the lands under control of the Forest Department include a considerable area, they are as follows :—

	Square miles.
In Jounsar Bawur (about)	... 144
In Dehra Doon and Seharunpore	... 445

11. *Jounsar Bawur.*—This pergunnah belongs to the Dehra District, and contains a total area of 283,097 acres.

Of this, 92,277 acres are under the control of the Forest Department, *viz.* :—

	Acres.
1st Class Forests	... 15,718
2nd Ditto	... 76,559

The remainder of the pergunnah is divided as follows :—

	Acres.
Cultivated area	18,971
Culturable waste	6,274
Unculturable waste, including 3rd class, or village forests	165,575

The population of the pergunnah according to the census of 1871-72 is 40,046 souls.

There is no large town in the pergunnah; Chukrata, one of the new military stations, is the only important place.

The Forest Department exercises control only in the 1st and 2nd class forests; the 3rd class are made over to the villagers to do what they please with, except that they must not *sell* any wood. The 1st and 2nd class forests are fairly distributed throughout the pergunnah; the 3rd class are close to the villages, and every village has a portion sufficient to supply leaves for fodder, firewood for domestic use, and a certain amount of building timber and grazing. In 2nd class forests villagers have also rights of grazing, and of cutting timber for building, under certain rules defined in the wajib-ool-urz.

12. *Dehra Doon.*—The Dehra Doon contains about 700 square miles. Of this about 160,000 acres are under the control of the Forest Department; some 34,000 of which are 1st class, and the remaining 126,000, 2nd class.

The remainder of the Doon is composed of—

	Acres.
Cultivated area	66,350
Culturable waste	22,959
Village and private forests	164,009

The population according to the last census is 115,711 souls.

The large towns are—

Dehra, containing a population of	16,043
Mussoorie and Landour	2,753
Rajpore	1,959
Kawli Hurripore	1,145
Sahunpore	1,070

Dehra is a favourite station of Europeans who have retired from Government service and prefer to live in India.

Mussoorie and Landour are but two names for one place,—Mussoorie is the western half, and Landour the eastern. They both are "hill sanitariums," and the latter also contains a Military Convalescent Depôt.

The inhabitants of the Doon derive their supply of timber, wood, grass, &c., chiefly from the village wastes and private forests—timber entirely so; but some villages do get their grass and firewood from Government forests.

The Government forests are situated chiefly along the foot of the Sewalic range or of the Himalayas,—the four forests of Nagsidh, Dholecote, Chandpore, and Ambarree are, however, exceptions to the rule; they lie out in the Doon.

13. *Seharunpore.*—The Seharunpore District contains 2,217 square miles, *viz.*:—

	Square miles.
Under control of the Forest Department (about)	195
Cultivated area	1,258
Culturable waste	309
Unculturable waste (about)	455

with a population of 883,782 souls.

The principal towns are Seharunpore, Hurdwar, Kunkhul, Jowalapore, Roorkee, Moozufferabad, and Fyzabad Behut.

The five first noted derive their supply of timber, firewood, grass, &c., chiefly from the Government and private forests of Dehra Doon, British Gurhwal, and Bijnour.

The Government forests in this district lie along the outer slope of the Dehra Doon Sewalics, and are under charge of the Dehra Forest Officer; they are scrubby poor forests, containing no large timber, but a quantity of small sâl suitable for native buildings, and plenty of bamboos and grass, and a large amount of scrubby wood suitable for fuel.

14. None of the other districts of the Meerut Division contain any Government forests, so no more notice need be taken of them in this report, except to state that a timber depôt has just been established by the Forest Department at Meerut, with a view of providing the inhabitants of the district with a plentiful supply of good building timber at fair rates; and also of creating a market for the 2nd class timber of which the Government forests of Dehra Doon, British Gurhwal, and Kumaon contain an almost unlimited supply.

15. **Agra Division.**—The Agra Division contains the six districts of Muttra, Agra, Mynpoory, Furruckabad, Etawah, and Etah.

There are no Government forests at all in this division, but some timber from the Kumaon and British Gurhwal forests finds its way down, and the State Railways (Rajpootana, and Muttra and Hatrass Road) have been sleepered from the deodar forests of Jounsar and Native Gurhwal, through the North-Western Provinces' Forest Department.

Some sâl logs were sent to Agra last year from the Kumaon and British Gurhwal depôts; they were sold, but not till after great delay, so great that it was decided not to send any more, as the demand there seemed so very small. A large quantity of the timber used in this division comes from Nepal and Oudh *viâ* Cawnpore.

16. **Rohilcund Division.**—The Rohilcund Division contains five districts, *viz.*, Bijnour, Moradabad, Bareilly, Budaon, and Shahjehanpore.

In two only of these districts are there any Government forests, *viz.*, Bijnour and Bareilly.

17. *Bijnour.*—The Bijnour District is 1,902 square miles 606 acres in extent, and has a population of 737,152 souls.

	Miles.	*Acres.*
The cultivated area is	1,036	95
Culturable waste	432	405
Unculturable waste	434	106

Included in the "culturable and unculturable waste" are about 86 square miles under control of the Forest Department.

This area comprises two forests—Rehur and Chandi; the former is managed by the Collector of Bijnour, under the direction of the Conservator; Chandi is also under the control of the Conservator, but is leased to the Roorkee Workshops, and managed by the Superintendent.

Both forests are situated along the northern boundary of the district, and adjoining the southern boundary of British Gurhwal.

The principal towns of the district are Bijnour, Nujeebabad, Nugeena, Afzulgurh, Rehur, Daranuggur, Barapoora, Chandpore and Asufpore.

The inhabitants of the Bijnour District get their supply of timber, firewood, grass, &c., partly from Government forests and partly from private forests; they are amply provided for.

18. *Bareilly.*—The Bareilly District covers an area of 2,985 miles 110 acres, and has a population of 1,506,801.

	Miles.	*Acres.*
The cultivated area is	1,918	520
Culturable waste	561	560
Unculturable waste	504	310

Included in the "culturable and unculturable waste" are 137 miles 201 acres under control of the Forest Department.

These forests are situated in the north-east corner of the district, adjoining the Kumaon Terai, and, as in Bijnour, are managed by the Collector under the direction of the Conservator.

The Bareilly District is well supplied with timber and other forest produce from the following sources: the Government forests of the district, the Government forests of Eastern Kumaon, the Nepal forests, and also from private forests along the banks of the Sardah, and the Government forests of Oudh.

The principal towns of the district are Bareilly, Phillibheet, Jehanabad, Nawabgunge, Furreedpore, Futtehgunge, Buheree, Meergunge, and Poorunpore.

19. There are no Government forests in the other three districts—Moradabad, Budaon, and Shahjehanpore. Moradabad derives its supply of *timber* almost entirely from the Government forests of Kumaon, its grass, fire wood, &c., partly from the Government Forests of the Terai, and partly from private lands.

Shahjehanpore is supplied with timber, grass, &c., from Oudh and Nepal.

Of Budaon I know nothing.

At Moradabad a timber depôt has just been established, similar to, and for the same object, as the one at Meerut.

20. **Allahabad Division.**—There are six districts in the Allahabad Division, *viz.*, Cawnpore, Futtehpore, Banda, Allahabad, Humeerpore and Jounpore.

There are no Government forests in this division.

The supply of timber, &c., is derived chiefly from the forests of Nepal, Oudh and Mirzapore.

A timber depôt is being established by the Forest Department at Cawnpore, similar to those at Meerut and Moradabad.

21. **Benares Division.**—The Benares Division comprises six districts, *viz.*, Azimgurh, Mirzapore, Benares, Goruckpore, Bustee and Ghazeepore.

Only in one of these districts, Goruckpore, are there any forests under control of the Forest Department.

22. *Goruckpore District.*—The Goruckpore District covers an area of 4,578 miles 508 acres as follows:—

	Miles.	*Acres.*
Cultivated area	2,701	444
Culturable waste	910	171
Unculturable waste	966	533

The population is 2,019,350 souls.

Included in the "unculturable waste" there are 73,607 acres (115 miles 7 acres), under control of the Forest Department.

The inhabitants of this district are thoroughly well supplied with timber, firewood, grass, &c., as may easily be understood considering the enormous amount of waste land; so well supplied are they, that, excepting the villages in the immediate vicinity,

and the station of Goruckpore, there is scarcely any demand from the Government forests from within the district. Fortunately, however, the Government forests are very favourably situated as regards water carriage,—the rivers Pias, Rohun and Raptee run through, or near to them, and then join the Ghogra; by this route the timber, &c., can be sent cheaply to Dinapore and Patna, where it finds a ready sale at remunerable rates.

The Government forests all lie to the north and east of Goruckpore, the furthest being about 45 miles to the north.

23. The other five districts of the Benares Division have no *Government* forests, but they are well supplied with timber, &c., from the neighbouring forests of Nepal and Mirzapore.

24. **Jhansie Division.**—The Jhansie Division is divided into three districts, Jaloun, Jhansie, and Lullutpore.

25. In the Jaloun District there are only 3 miles 18 acres under control of the Forest Department; these lands carry no timber, they are merely grass rukhs with a few scrubby acacia bushes, and therefore need no further notice.

26. *Jhansie District.*—The Jhansie District covers 1,567 square miles, and has a population of 317,335 souls.

The area is divided as follows:—

	Miles.
Cultivated area	754
Culturable waste	368
Unculturable waste	445

Included in the "unculturable waste" are 31 miles 261 acres under control of the Forest Department; these forests are managed by the Deputy Commissioner of the District (or one of his Assistants), directed by the Conservator.

The forests are pretty fairly distributed; they lie near the towns of Jhansie, Mow, Raneepore, Gurotah, and Goorserai.

The district is so well supplied with timber, firewood, &c., from the numerous private forests, that there is but little demand from the Government reserves.

27. *Lullutpore District.*—The Lullutpore District contains 1,947 miles 264 acres, composed as follows:—

	Miles.	*Acres.*
Cultivated area	366	72
Culturable waste	1,072	637
Unculturable waste	508	195

and has a population of 212,628 souls.

The chief towns are Lullutpore, Mehrownee, Bansee, Bala Behut, and Murowra.

The lands under control of the Forest Department comprise about 177 square miles; the forests are poor, but they are sufficient to supply the population with as much rough building timber, firewood, grass, bamboos, &c., as is needed, assisted as they are by private forests and village plantations.

The Government forests are scattered all over the district in numerous small patches.

28. **Kumaon Division.**—The Kumaon Division contains three districts—Kumaon, British Gurhwal, and the Terai. The Commissioner of Kumaon is also Agent to the Lieutenant-Governor of the North-Western Provinces for the Terai State (Native Gurhwal).

This division is very rich in forests. A large portion of the North-Western Provinces derives its timber, &c., from the fine sâl forests at the base of the Himalayas, between the Sardah and Ganges rivers.

29. *Kumaon District.*—The Kumaon District covers an area of 6,000 square miles, and contains a population of 432,888 souls.

The 6,000 square miles are distributed as follows :—

		Miles.	*Acres.*
Cultivated areas	... ...	316	267
Culturable waste	... ...	146	542
Unculturable waste	... ...	5,536	471

Included int his "unculturable waste" are about 800 square miles under control of the Forest Department.

A very large proportion of this district, say two-thirds, is in the Himalayas, and within this tract the Forest Department has no control, except in the oak and pine forests within a twelve mile radius of the new military station of Raneekhet (about 70 square miles), and in a small area of about 30 square miles of oak and pine forests close to Nynee Tal.

There are some small deodar forests in the district, and also some fine forests of *pinus longifolia;* the former are too small and too far removed from rivers to be of any value except for local purposes; the latter could (I believe) be worked if required.

The forests of the Kumaon Bhabur are the important ones of the district,—they extend from the Eastern Gurhwal boundary on the west, to the Sardah river Nepal boundary on the east, the northern boundary being a line running along the outer slope of the Himalayas just above the sâl *(shorea robusta)* limits, so as to include all valuablesâl forests within Forest Department bounds. The whole belt is about 83 miles in length from east to west, and an average of nearly 9 miles in breadth. Included within this belt is a large tract which Government leased to the Kumaon Iron Company.

It is bounded on the west by the Munniar Gudehra and the Dubka river, on the east by the Chormchilla stream, on the north by a line extending from the Sormchulya Peak to near Ramgurh, and on the south by a line of pillars.

At present this tract is worked and conserved by the Forest Department, but it may at any time have to be given up if the iron-works are started again.

The principal towns of the district are Almorah, Nynee Tal, Chumpawal, Raneekhet, Lohooghât, Petoragurh, Burmdeo, Huldwanee, Kaladoongee and Ramnuggur.

The six former are in the Himalayas, and the four latter are flourishing marts in the Bhabur (lands between the foot of the Himalayas and the Terai) for about five months during the cold season, but almost deserted for the remainder of the year.

The whole district is most amply supplied with timber, fuel, grass, &c., either from the extensive village wastes, or from the Government forests.

30. *Gurhwal District.*—The Gurhwal District contains 5,500 square miles, with a population of 310,282 souls.

		Miles.
Cultivated area	... ...	209
Culturable waste	... ...	48
Unculturable waste	... ...	5,243

British Gurhwal is very similarly situated to Kumoan, only that it has less "Bhabur" lands and no Terai.

	Miles.
Say, within the Himalayas	4,400
Bhabur lands	1,100

In the Himalayan tract there are no lands under control of the Forest Department, but there are some magnificent *pinus longifolia* forests along the banks of the Pindur and Aliknunda, which may at any time be taken over if required, as was the case in 1867-70, when the Agustmoonee forest (on the Aliknunda) was leased to the East Indian Railway for supplying *pinus longifolia* sleepers.

There are also some deodar forests at the head of the Aliaknunda. Colonel Pearson visited them in 1870 and decided that they were not worth working.

In the Gurhwal Bhabur the Forest Department have about 600 square miles, extending from the Ganges on the west to the Kumaon boundary on the east; bounded on the north by a line immediately above the limits of sâl, and on the south by a road called the "Sub-Montane road," which is also the southern boundary of the district.

The belt is about 68 miles in length from east to west, and has an average breadth of about 9 miles.

The principal places in Gurhwal are Sreenuggur, Budreenath, Josheemuth, Paoree (the head-quarters of the Assistant Commissioner), Kedarnath and Kotdwara.

All except Kotdwara are in the Himalayas, and have a great deal more timber, fuel, grass, &c., than they require.

Kotdwara is in the Bhabur on the road from Paoree to Nujeebabad; it is merely a bazaar where the hill people assemble in the winter to exchange their agricultural and jungle produce for wearing apparel and other necessaries; the inbabitants get their timber, fuel, grass, &c., partly from village wastes and partly from the Government forests adjoining.

31. **Forest Legislation.**—The Forest Legislation in the North-Western Provinces is not yet in a very satisfactory state; the forests were first put under a Conservator in 1868; shortly afterwards the Inspector-General of Forests commenced enquiring from Conservator, &c., with a view of drawing up a more comprehensive Forest Act than VII. of 1865.

In continued expectation of the passing of this new Act, the Conservator delayed framing a set of rules on the old Act VII.; this state of uncertainty continued until 1872, when, hearing that there was no chance of the new Act being passed, the Conservator drew up a set of rules, and submitted them for the approval of the Lieutenant-Governor of the North-Western Provinces in November of that year.

His Honor approved of the rules and sent them round for the opinions of all Commissioners in whose divisions there were "forests;" and, with one or two very trifling alterations, the Commissioners approved of them also.

Owing to various circumstances, an interval of delay then occurred, and in July, 1873, His Honor the Lieutenant-Governor discovered some discrepancies in the rules, and had a new set framed. The new set was duly forwarded to the Government of India for sanction of His Excellency the Governor-General, but the Officiating Inspector-General of Forests, considering them not sufficiently strict or complete in technical terms, re-drafted them, and sent the re-draft for approval of the North-Western Provinces' Government in due course; the Commissioner of Kumaon objects very strongly to these re-drafted rules, and says that if they become law, the boundaries of the Kumaon Bhabar forests must be altered and more forest land made over to the villagers, for that when he settled the boundaries with the Conservator in the spring of 1873, it was with the understanding that the "forests" would be subject to the rules *then* before the North-Western Provinces' Government.

The forest legislation is therefore still in a very unsettled state.

There are certain local rules in force in all the forest divisions, very simple, but just sufficient to prevent illicit felling of trees, appropriation of forest produce without paying duty, &c., &c.

To give a list of these rules would increase the length of this already lengthy report; and as we are now in a fair way towards getting a properly sanctioned set of rules for the whole Province, I have thought it unnecessary.

During the year under report the new settlement of Jounsar Bawur has been finished, and as some of the clauses of the wajib-ool-urz (settlement of rights) affect the "forests," a copy of such clauses is given herewith:—

"The boundary of the Government forests that has been laid down in my khutt has been read out to me, and is written in the settlement papers.

"There is first and second class forest included in the above.

"In the first class forest I have no rights; I cannot go within it, or take my cattle there, unless allowed to by the Forest Officer.

"In the second class forests I hold rights as follows:—I may graze my sheep and cattle there, and may cut grass for cattle, and also cut leaves for bedding and food for my sheep and goats, as may be allowed by the Forest Officer. I may remove decayed leaves for manure. I may take dry wood for fuel, and also for making houses.

"I may cut ringalls for my own use, and cut the following kinds of green wood for fencing in my fields, *viz.*, "dingáree," kánta, lodh, and ayár.

"And I may cut green wood for agricultural implements, and for making houses, as directed by the Forest Officer.

"Any landholder in my khutt that wishes to cultivate land in forest bounds shall apply for permission to the officer, and only commence cultivation when the period for which it is allowed, and the limits of such cultivation have been given him; and whatever extra land revenue is fixed for such land by the Superintendent of the Doon, I will pay.

"After the expiration of the term for which I am allowed to cultivate such land, if the term be not extended by the Forest Department, I will stop cultivating such land.

"I shall by cultivating such land acquire no right of occupancy of any kind.

"Whatever piece of second forest the Forest Officer shall wish to close, I shall receive one month's notice of, through the Superintendent of the Doon, and the Forest Officer shall have power to close such piece of forest, provided sufficient forest is left open for my requirements; and in the event of my not accepting the forest remaining open as sufficient for my wants, or it seems to me that the Forest Officer has closed all the forest near my village, and left forests far off open, I may then petition the Superintendent of the Doon, and arrange for a sufficiency of grazing ground.

"In the second class forest thus closed I have no right to graze, or go into, until I receive an order to do so through the Superintendent of the Doon.

"I cannot in any way alienate or exchange my rights in the second class forests.

"In the second class forest I will light no fires, and take all possible care that they be not burnt; and if fire does get into the second class forests, and I cannot prove who lit the fire, I shall be liable to fine; and whatever rights I had formerly over water in the second class forests, those shall be maintained to me, and roads to and from water shall remain as they were.

" And the remainder of the forest and other land (not included in Government forest) is the joint property of the landholders of my khutt, and it is put aside for our use.

" The landholders of my khutt may sell to each other, or to other inhabitants of the pergunnahs, planted trees, such as toon, shishum, and fruit trees, but other trees grown in any way they may in no way sell to any contractor or inhabitant of Chukrata, or any Commissariat or Public Works employee, or any one else.

" And I may sell no tree that I have not planted, but I may give or exchange with the landholders of any other khutt.

" And I may sell grass, ringalls, or bamboos to any one.

" And whatever inhabitants of another khutt have hitherto taken grass, leaves, &c., free from within the boundaries of my khutt, may do so in future without paying any due; and where they have grazed, graze as heretofore, provided they bring the sheep in at morning and take them out at night; but if they build huts for the sheep in my khutt, I may claim grazing dues. And whatever pieces of forest the landholders of my khutt may close and not use themselves, the inhabitants of another khutt may not enter. If it is proved that the inhabitants of my khutt have broken any of these rules, it shall be in the power of Government to confiscate all the forest and uncultivated land thus made over to my khutt. And whatever wood may not be in the forest made over to my khutt, and that I want to get from the Government forest, I shall indent for, forwarding a petition for same to the Superintendent of the Doon, in which the amount and time for removal is stated.

" I am to give these petitions on the 1st of March and 1st September, every six months, and after the indents have been passed by the Superintendent of the Doon, I have a right to the wood.

" If I do not send the indent in in the time specified, my right will lapse for six months. And after the indents are passed by the Superintendent of the Doon, I am to have the wood allotted to me between the 20th and 30th March, and 20th and 30th September; and if I am not present to have the wood allotted, my right lapses for that year, and what deoder I get from the Government forests I will cut up with the saw, and not with any other tool. If I cannot arrange for sawing up the wood, I may get help from the Forest Department in the matter."

Rough translation.

I.—STATE FORESTS AND LEASED FORESTS.

ART I.—SPECIAL.

32. SECTION 1.—AREA, BOUNDARIES, DESCRIPTIVE ACCOUNT.—This portion, and the remainder of the Report, will be given by "*Forest*" Divisions, in the same rotation they have always stood, both in Annual and Budget Reports.

33. *Nynee Tal Sub-division.*—The forests of this sub-division lie to the north, east, and south of Nynee Tal; they are demarcated by a circle of pillars, 22 in number, —natural features such as water-courses and ridges being taken advantage of wherever available.

The forests are of no value except for supplying building timber and firewood to the residents of Nynee Tal; they consist chiefly of oak and rhododendron, with patches of cheer (*pinus longifolia*) here and there; they have always been carefully looked after, thanks to the Commissioner of Kumaon, and consequently are quite capable of yielding all that is likely to be ever required from them.

34. *Kumaon Bhabur Forest Division.*—These forests have been divided into blocks as follows:—

Block I.—Bounded on the west and north-west by the Gurhwal boundary; on the south by the Sub-Montane Road from Kotee Rao as far east as the Pheka river

thence up the Pheka to the base of the hills, and so on (along the base) to the Kosee river; on the north-east the hill boundary; and on the east the Kosee river.

Block II.—Bounded on the west by the Pheka river; on the south by Bringara Har, or road through sâl forest to Seerutt, and along the edge of the forest eastward as far as Kuserooa Rao; on the east by Kuserooa Rao to the foot of the hills; and on the north the base of the hills.

Block III.—Bounded on the west and north by the Kosee river; on the north by the hill boundary; on the east by the Kumaon iron works boundary; and on the south by the road from Ramnuggur along the base of the outer hills.

Block IV.—Bounded on the north by the road from Ramnuggur to Kaladoongee; on the west by the Kosee river; on the south by the Terai boundary; and on the east by the iron works boundary.

Block V.—Bounded on the north by the hill boundary; on the west by the iron works boundary; on the south by the two Bukra rivers to their junction; and on the east by the Futtehpore Bukra river.

Block VI.—Bounded on the north by the hill boundary; on the south by the base of the outer range of hills from Futtehpore above cultivation as far as the Jam ravine, thence down that ravine to where it meets the Huldwanee and Burmdeo Road, thence along the road eastward to the edge of the sâl forest at Luckman-mundee village, and round above Luckman-mundee by the mill to the Deoha river; on the east by the Deoha river.

Block VII.—Bounded on the west by the Futtehpore Bukra river; on the south by the Terai boundary; on the north by the edge of cultivation; and on the east by the Deoha river.

Block VIII.—Bounded on the west by the Deoha river; on the south by the base of the outer range of hills as far as Burmdeo; on the north by the hill boundary; and on the east by the Sardah river.

Block IX.—Bounded on the north by the base of the outer range; on the east by the Sardah river; on the south by the Terai boundary; and on the west by the Deoha river.

The areas of these blocks have not yet been calculated, for it is not yet finally settled whether these boundaries remain as such or not, *vide* paragraph 31.

The whole of the nine blocks are actually one continuous forest, extending from the Gurhwal boundary on the west, to the Sardah river on the east, bounded on the south by the Terai boundary, and on the north by a line just above the limits of the sâl.

The western and eastern are natural boundaries, the southern boundary is marked by a norrow ditch; and the only one along which it was ever contemplated to have pillars is the northern, and the work is in hand now.

There will be no necessity to have pillars round the blocks, except in a few places where the natural boundaries are not sufficiently clear; and as the cultivation within "forests" *below the Sub-Montane Road,* which follows the base of the outer range from the Ganges to the Sardah, is likely to be increased annually, it would be useless to erect pillars there. Villages within "forests" *above the Sub-Montane Road* are demarcated, and not likely to be increased.

The forests *above* the Sub-Montane Road are the valuable ones; those below, with the exception of Block IX., are not worth much but for fuel and inferior timber; they contain no valuable sâl, and will always have to remain as open forests for grazing and other village requirements.

Blocks I. and III. are particularly valuable ; they have been worked, but not a bit too severely had fires been kept out. Plenty of old trees remain for producing seed, and gradual extension of the fire conservancy system, which was commenced last winter, will make these blocks one of the most valuable sâl forests in India.

Block II. contains a large sâl forest, but it is very poor, and can never produce timber worthy of the name; it brings in a lot of revenue though from dry poles (jhar tors) ; and these dead trees are the only ones allowed to be felled.

Blocks VI. and VII. are *below* the Sub-Montane Road ; they contain some khair (*acacia catechu*) forests which bring in a good revenue from supplying pestles for sugar mills and rice pounding (chooruns and láts), and also some sissoo (*dalbergia sissoo*), but none of any size. These two blocks are grazed over and burnt every year, and must always remain open forests on account of the large extent of cultivation within them.

Blocks V. and VI. contain a good deal of sâl, but they have been heavily worked in most parts, and chiefly for supplying the free grant of timber—200 cart loads annually—to the Nawab of Rampore which was reported upon in the North-Western Provinces Forest Report for 1872-73. To the east of Block VI. there is some fine sâl and toon.

Block VIII. contains perhaps as many, or more, sâl trees of *six feet girth and over* as the whole of the rest of the North-Western Provinces.

On account of their inaccessibility, the main part of the forests of this block have never been worked; a few trees have been felled on the outer slopes and along the water-courses which are accessible to carts, but nothing of any consequence.

There are three enormons sâl forests in this block : the valley of the Nindhore, the valley of the Siraragar, and the Kuldoonga forest on the Sardah.

We know that all these forests are very rich indeed in sâl. Kuldoonga in particular is a fine virgin forest of magnificent straight sound trees ; but it is quite impossible for me to give even any idea of the amount they contain, for as yet the area is unknown, and there are no roads or even paths through these impenetrable thickets.

Block IX. contains a good deal of sâl on the sloping ground between the hills and the Terai. These are young forests that have been heavily worked in former years, and are burnt annually ; they contain a great deal of useful *small* timber, such as poles used in native buildings ; whether they will eventually become good forests remains to be proved. I fear not, for most trees of 4 feet girth and upwards show a very decided tendency to decay.

An irrigation canal has lately been constructed on the west bank of the Sardah ; it leaves that river just above the Burmdeo Mundee, and will, of course, increase cultivation considerably. The Burmdeo Chandnee sâl forest, which is in this block, has been made over to the civil authorities during the year, and is now being cleared of forest. The clearing will remain under control of the Forest Department until completed : this new cultivation will not necessitate *any more* sâl forests being given up.

35. *Raneekhet sub-division.*—The forests of this sub-division are 11 in number. They all lie within a twlve mile radius of Raneekhet, and cover a total area of about 70 square miles as follows :—

	Square miles.		*Square miles.*
Airadeo Forest ...	... 28	Tetalikhet Forest ...	... 5
Seeahi Devi „ ...	... 4	Siyún „ ...	... 2
Deoleekhet „ ...	... 12½	Berlikh „ ...	... 2
Chilianao „ ...	... 2½	Butrong „ ...	... 8
Gannia Deo „ ...	... 1½	Machor „ ...	... 1½
Kuttalekh „ ...	... 3		

Airadeo forest is from 15 to 18 miles distant from Raneekhet *(by road)*, and about 12 from Almorah. It is situated on a range of hills which is bounded on the west by the Gugas stream, on the north and east by the Kosee river, and on the south by the *Nana* Kosee, a tributary of the Kosee. It consists mainly of cheer *(pinus longifolia)* of very inferior quality (twisted), except on the northern limit, where it is pretty fair ; oak and rhododendron are plentiful at the higher elevations and in the ravines; there is also a good deal of alder along the edges of the water-courses.

In all probability it will be many years before this forest will have to be worked.

Seeahi Devi forest lies a little south of east from Raneekhet, at a distance of about nine miles, and with a deep valley between.

This is a very similar forest to Airadeo, but of inferior quality.

Deoleekhet forest extends from the north-east boundary of Raneekhet cantonments to the village of Dwarsoon, which is about nine miles from Raneekhet along the Almorah cart-road ; it consists chiefly of cheer of good quality, with oak and rhododendron in the ravines; and from its vicinity to Raneekhet and the easy nature of the ground, is a very valuable forest.

Chilianao forest is situated on a ridge extending north-west from Raneekhet, and it adjoins cantonments on that side ; it consists chiefly of twisted cheer, and is valuable only for firewood and charcoal.

Gannia Deo forest extends from the south-west limit of cantonments to Tarakhet two miles down the Ramnuggur cart-road ; it consists mainly of good cheer, and as the cart-road passes through it, it is favourably situated for transport.

Kuttalekh forest lies between Tarakhet and Seonee, which latter place is 12 miles from Raneekhet on the Ramnuggur cart-road; the old road to Ramnuggur, available for ponies, mules, &c., passes through the southern portion, and the cart-road through the northern. The forest is therefore favourably situated for working ; it consists principally of good cheer, with a few oaks scattered here and there.

Tetalikhet forest occupies the hill which lies between Seonee and Bhutronjkhal; this latter place being about 19 miles from Raneekhet along the Ramnuggur cart-road.

The forest extends from Rueechee (15 miles from Raneekhet on the cart-road) to the village of Punth, in a direction a little west of north. The higher parts of the hill are occupied chiefly with oak, but the main part of the forest is good cheer,—near to Seonee particularly good.

Siyún forest extends from near Rueechee along a ridge running in a south-eastern direction ; it consists chiefly of oak and rhododendron, but near the village of Siyún there is a plot of good cheer.

Berlikh forest is situated further along the same ridge, after an interval of about half a mile from Siyún forest; it contains some good cheer, with an admixture of oak and rhododendron. Both this forest and the preceding one could be worked either by the old Ramnuggur road or the cart-road.

Bhutrong forest extends from Bhutrongkhal along the cart-road, which is the northern boundary, to a place called Jalu Khan, about five miles further on; thence the boundary goes down to the Kosee river at Bismolee village, whence it follows the course of the river up stream, excluding village lands, to the village of Aurel, and then turns in a northerly direction to Bhutrongkhal. The northern face of the hill is a fine oak forest ; on the southern face there is a good deal of cheer in strips along spurs, but the main portion of this face is comparatively bare ground. Except the oak forest, this block is of comparatively small importance.

Machoor forest is a continuation of Bhutrongkhal forest, but a number of scattered cultivated patches rendered it necessary to separate the two; it consists chiefly of rather inferior cheer, and from being so far from Raneekhet is of very little importance.

The demarcation of these forests by masonry pillars is completed, except in one small portion which had to be referred to the Commissioner and Conservator; it is settled now, and will very soon be demarcated. The cultivated patches within "forests" have, with the exception of one or two, all been settled and demarcated by temporary pillars; the permanent pillars will be erected as soon as the rains cease; they would have been erected before, but that the Commissioner's sanction as to which portions were to be struck out of the settlement, and which were to remain, had to be obtained.

36. *Gurhwal Bhabur Forest Division.*—The forests in this division have been divided into the following blocks:—

Block I.—Bounded on the north by the limits of sâl; on the south by the Sub-Montane Road, which is also the boundary between Gurhwal and Bijnour Districts; on the east by Kotee Rao and the western Kumaon boundary; on the west by the Ramgunga river.

Block II.—Bounded on the north by the limits of sâl; on the south by the Sub-Montane Road; on the east by the Ramgunga; on the west by the Kalooshaid, Kandikhal, and Palein streams.

Block III.—On the north by the limits of sâl; on the south by the Sub-Montane Road; on the east by the Kalooshaid, Kandikhal, and Palein streams; on the west by the Koh stream.

Block IV.—On the north by the limits of sâl; on the south by the Sub-Montane Road; on the east by the Koh stream; on the west by the Rawassun stream.

Block V.—Bounded on the north by the limits of sâl; on the south by the Sub-Montane Road; on the east by the Rawassun stream; on the west by the Ganges river.

These forests, as also those of the Kumaon Bhabur, have been fully described by Major Pearson in his No. 102A., dated 31st January, 1869, to the address of the Secretary to Government, North-Western Provinces, Public Works Department.

The Gurhwal Bhabur forests are even a more complete block than those of Kumaon, for there are no village rights of any kind affecting them, except just along the outer slopes of the Sewalics, where the forests are of no value.

The main portion of this division consists of the *remains* of magnificent sâl forests, which in former times have been most shamefully worked by native contractors, and lately by Captain Read and Mr. Finn for Government. Before they were placed under charge of the Forest Department, every tree that was at all handy for exporting was recklessly felled without the slightest regard to the future of the forest, and the consequence is, that none remain except in situations that were *then* considered inaccessible.

The large sâl forest of the Mondhal valley (Block II.) however escaped, for there was no road to it; there were also a good many portions to the north of the Patlee and Kotree Doons which were never reached. Some of these latter portions have been carefully worked by the Forest Department during the last five years; they have yielded many thousand cubic feet of logs and scantlings, and still contain sufficient for five or six years more supply of scantlings, but very few trees remain sufficiently accessible to be removed *in log*.

The Mondhal forest is still untouched, but it is proposed to make a cart-road up the valley next year, so as to be prepared for working the forests the year following if found necessary.

The area of these forests is not known correctly, but is estimated at about 600 square miles; the boundaries are all complete except the northern line, which will be settled during the ensuing winter. This line was supposed to have been settled long ago, but when the demarcation (by pillars) was commenced last winter by the Forest Department, difficulties occurred, and it was decided to let the matter rest for the present,

and that the Deputy Commissioner, accompanied by the Conservator, should settle and demarcate the whole line next December.

37. *Dehra Doon Forest Division.*—The following is a list of the forests in this division.

Eastern Doon (a).—The forests on the northern face of the Sewalic hills, including Motrawalla, Boolawalla, Khansrao, and Moteechowr. Area 34,343 acres.

This block of forests is bounded on the west by the Dehra and Seharunpore road; on the east by the villages of Purteetnuggur and Raiwalla; on the north partly by a cleared boundary line running parallel to the Sooswa river, and partly by the Dehra and Hurdwar road; and on the south by the watershed line of the Sewalic range.

The two western forests of this block, Motrawalla and Boolawalla, are among the most promising sâl forests of the Doon. Khansrao contains some good patches of young sâl, especially towards the north-west corner; the other portion of this forest and the whole of the Moteechor contain nothing of any value, and very little of even any promise.

The boundary marks, both lines and pillars, are all in good order.

(b) Nagsidh Forest.—Area 17,357 acres. This forest is bounded on the north and north-east by the village boundaries of Motrawalla, Rewada, Huripur, Mohkumpur, Kulan, Hurriwalla, Kooyawalla, Fyzulgurh, and Balawalla; on the east by Buksurwalla, Luchewalla, Missurwalla, Markham grant and the Song river; on the south and south-west by the villages of Nagul, Kishenpore, Doodlee, Phandon, and Mahomedpore.

The Nagsidh forest is a peculiar isolated hill in the middle of the Doon, perfectly separated from both Himalayas and Sewalics by the two small rivers Song and Sooswa; it consists almost entirely of sâl, with a few inferior kinds of trees scattered here and there, and in some portions a good sprinkling of sein *(pentaptera tormentosa)*; from being so very handy for export, it has been sadly overworked, but still there are quite sufficient trees left for reproduction; and if fire could but be kept out for seven or eight years, a splendid young forest of sâl would grow up, if one may judge from patches here and there which have escaped being burnt.

The boundary marks and lines of this forest are complete and in good order.

(*c*) The forests along the northern side of the Eastern Doon, comprising Tursal, Thannoo, Seoree and Kalamuttee. Area 45,922 acres.

This block is bounded on the north by a portion of Malkote, Kote, Thannoo, Ramnuggur, Mrs. Lister's grant and the Tehree State; on the south by Moteechour forest, and the villages of Jogeewalla, Sidhoowalla, Bhuttounwalla, and Beebeewalla; on the east by the villages of Rikkicase, Kurruk Shampore, Goomaneewalla, Beebeewalla, and the river Ganges; on the west by the Futtehpore grant, the villages of Bhainawalla, Khandurwalla, Sungteeawalla Kallawalla, the river Song, and the Dehra and Hurdwar Road.

The upper portion of Thannoo is the very best sâl forest in the Dehra Doon; and, with the exception of a few out-of-the-way inaccessible places, is the only forest where anything approaching good-sized and well-grown timber now exists in these terribly overworked forests. If this forest could but be closed against fires and grazing, it would grow into one of the finest in the North-Western Provinces.

Some of the upper portion of the Tursal is fairly promising, but the sâl has been felled to such an extent, that the coarse grass has taken the place of the scanty short grass that grows in well-shaded forests, and consequently the fires burn with such vigour, that they clear off every young seedling annually, and also considerably injure all the trees.

The remaining portions of this block, with the exception of some patches of sissoo (*dalbergia sissoo*), khair (*acacia catechu*), toon (*cedrela toona*), jamun (*lizygium jambolanum*), &c., on the rivers Song, Sooswa, and Jakhun, are unworthy of the name of forests; they are merely grassy plains, dotted here and there with scrubby useless trees. They are still under control of the Forest Department, but, under orders of this Government, are to be handed over for cultivation as soon as any enterprising people can be found to cultivate them.

The boundaries of this block are generally settled, but the final decision of the civil officer is required in a few trifling cases.

The pillars and boundary lines are complete, with these few exceptions.

This completes the forests of the Eastern Doon.

Western Doon (*d*).—The forests on the northern face of the Sewalic hills, including Chunderbunnee, Sahunspore and Timlee. Area 54,342 acres,

This block is bounded on the north by a broad boundary line running parallel to the Arsun river, and just above village lands; on the south by the watershed line of the Sewalics; on the east by the Dehra and Seharunpore road; and on the west by the river Jumna.

It is a long narrow strip of about 25 miles in length, and from 2 to 5 in breadth. Sahunspore is by far the best of the three; it, together with the eastern end of Timlee and the western end and the south-eastern corner of Chunderbunnee, contain some very promising young sâl, which, if properly conserved, would grow into good timber.

N. B. This last remark will happen very frequently in this report, the explanation as to why such forests are *not* "properly conserved," will be found under section 4.

The remainder of this block is useless except for grazing and fuel,

The bundary lines and pillars are complete and in good order.

(e) Rampore-mundee forest covers an area of 4,649 acres. It is bounded on the north and west by the Jumna river; on the south by the Arsun river; and on the east by the Koonja grant.

It is a piece of low-lying ground near the Jumna, covered with grass jungle, with a few scrubby khair and sissoo trees near the Arsun, fit for nothing but fire-wood.

The boundary pillars are complete,

(f) The Ambarree forest. Area 4,004 acres.

Ambarree is bounded on the north by the villages of Dumeh and Sowlee; on the east by the villages of Sowlee and Langha; on the south by the villages of Langha and Rooderpore; and on the west by the Annefield grant. Ambarree is a perfectly isolated hill on the left bank of the Jumna, commencing about a mile above the Jumna bridge on the Seharunpore and Chukrata road, and extending for about four miles in a south-easterly direction, with an average breadth of about 1½ miles.

Immediately below the main ridge of the hill there is a narrow belt of very promising looking well-grown young sâl, with some trees of over 4 feet in girth; the rest of the forest is chiefly sâl, but very poor, and never likely to grow into anything better than poles. The soil of Ambarree, except near the ridge, seems very unfavourble to sâl, but particularly favourable to that pest the maljun creeper (*bauhinia racemosa*).

The boundary lines and pillars are complete and in good order.

(g) Chandpore Forest. Area 3,200 acres. Bounded on the north by the Kotee nulla; on the east by Colonel Macpherson's and the Haorawalla grants; on the south by the Attic Farm grant and Hukumpore village; and on the west by Western Hopetown.

Chandpore is a detached forest lying about a mile to the south of the Ambarree forest. A large portion of Chandpore is of worthless sandy soil, intersected by numeous ravines, on which nothing thrives except coarse grass. In two or three places to the north and south-east reproduction is good, and the trees appear promising; but taken as a whole it is not a good forest, and, as far as I could learn, never has been: it is composed almost entirely of soil.

The boundary lines and pillars are complete and in good order.

(h.)—Dholecote forest. Area 12,434 acres. Bounded on the north by the villages of Baktourpore, Bhowalla, and Naegaon; on the east by the villages of Kotee and Mandowalla; on the south by Dehra Doon Tea Company's and Mrs. Dick's lands; on the west by Hopetown and Attic Farm grants, and the village of Rajawalla.

Judging from the old stumps, the Dholecote forest once bore some fine sâl trees, but every sound tree was felled years ago, and without the very slightest regard for the future.

In most part of this forest the reproduction is very good; and if grazing and fires could be excluded from certain selected portions, they would doubtless grow into fine sâl forests.

A small portion of the boundary, where it marches with Mrs. Dick's, is still unsettled, but in a fair way towards settlement; the remainder is complete, with boundary lines and pillars.

This completes the Western Doon.

(i.)—The Eastern Seharunpore. Area 65,195 acres. Bounded on the north by the watershed line of the Sewalic hills; on the south partly by the Sub-Montane forest road, and partly by 35 villages; on the east by Hurdwar and Miapore village bounds; and on the west by the Dehra and Seharunpore road.

There is scarcely any timber in this block, and sâl only in a few places, and then of a very inferior quality, fit for nothing but poles for native buildings: but still it is a valuable jungle for firewood and charcoal, bamboos, bhabur grass, &c., and affords grazing to thousands of cattle.

The boundaries are all settled and completely demarcated by stone pillars.

(j.)—The Western Seharunpore. Area 59,819 acres. Bounded on the north by the watershed line of the Sewalic hills; on the south partly by the Sub-Montane forest road, and partly by the bounds of 9 villages; on the east by the Dehra and Seharunpore road; and on the west by the river Jumna.

This block corresponds to the last, and is very similar in most respects. Sâl is less plentiful, but there is an almost equal quantity of inferior kinds of timber and of firewood. It is a valuable jungle for grazing, and it supplies a good deal of second rate timber and firewood to the Seharunpore and Chukrata road works, and the Eastern Jumna Canal.

The boundaries are all settled and properly demarcated by pillars.

38. *Jounsar Forest Division.*—The first class forests are in the seven undermentioned khutts:—

Danan, Bharam, Missan, Kailo, Lakan, Bawur, and Deogár, covering a total area of 15,718 acres.

The second class forests contain 76,559 acres, and are distributed amongst the following khutts:—

Hurripur Bias, Panjgaon, Bana, Bissahil, Silgawn, Atgawn, Chando, Maletha, Dissan, Bamtan, Bangawn, Seli, Kora, Phirtái, Lakwár, Thapler, Uperli, Atgawn, Chultari and Bundár, Bislár, Duár, Mohna, Danan, Bharam, Missan, Kail, Lokan Bawar, Deogár, and Bailár.

It would take many pages to describe all these forests, as has been done for Dehra Doon; and as the report has already become rather long, and a great deal still has to be written, and as a very excellent description of the Jounsar forests was given by Major Pearson, Conservator of the North-Western Provinces' forests, in his No. 211A. dated 12th May, 1869, to the address of the Secretary to Government, North-Western Provinces, Public Works Department, I will merely remark that most of the first class forests are deodar, and that the second class are composed of a *little* deodar and cheel (*pinus excelsa*) and a *great deal* of oak, silver fir, spruce, pine (*pinus longifolia*) and rhododendron.

The boundaries of these forests are all settled, and the demarcation is going on rapidly. About two-thirds of the temporary pillars have already been replaced by permanent ones, and the whole work will be finished during the current year.

Bhageruttee Forest Division.—This division includes all the forests leased from the Tehree Rajah, except those on the Tonse and Pabur, which are under charge of the Jounsar Forest Officer, and a small portion on the outer slopes of the Himalayas, between Mussoorie and the Ganges, which is under charge of the Dehra Doon Forest Officer.

These forests have been so fully described by Major Pearson, Conservator of the North-Western Provinces, in his No. 233A., dated 7th November, 1869, and his No. 248A., dated 5th December, 1869, to the address of Secretary to Government, North-Western Provinces, Public Works Department, both of which reports are printed in the proceedings of the Government of the North-Western Provinces in the Public Works (Forest Branch) Department for the month of Jauuary, 1870, that it is needless for me to re-describe them.

Since then all the forests mentioned in the No. 233A., above quoted, have been pretty severely worked to supply deodar sleepers for the Rajpootana State Railway, but there is a good deal of timber yet left in places where the logs could not be rolled from, which might be sawn on the spot, carried to the river on men's backs, and then floated down during the slack floods; there is also a quantity of dead and fallen timber, which I reported on in June last.

Blocks 6, 18, 21, 22, as shown in the sketch map accompanying Major Pearson's No. 248A., above quoted, have also been since worked for sleepers. Block 23 of this report is called the Mundhole forest, a mistake, for the Mundhole forest is Block X., as shown in the map accompanying Major Pearson's No. 211A., dated 12th May, 1869, to Secretary to Government, North-Western Provinces, Public Works Department, and is in *British* territory: it has yielded about a lakh and a half of sleepers.

The leased forests have never been surveyed or demarcated, and it is not at all necessary, so I cannot give the areas.

40. *Goruckpore Forest Division.*—The Goruckpore forests are 10 in number as follows:—

		Acres.			*Acres.*
Nugwa	about ...	6,000	Baree Bynsee	about	6,000
Sonaree	„ ...	22,000	Bhelumpore	„ ...	1;904
Doodhai	„ ...	8,600	Bankee	„ ...	2,250
East Lehra	„ ...	7,600	Tilkowia	„ ...	2,220
West Lehra	„ ...	12,300	Ramgurh	„ ...	4,733

Grand total 73,607 acres.

(*a.*) The Nugwa forest is the most northerly: it is bounded on the north by the plains of Mahawer Nullah; on the east by the plains of the Rohan river; and on the south by the plains of the Pias.

This forest has been worked as coppice from time immemorial, and now contains nothing but coppice stems of from one to 150 years' growth. These stems are all more or less decayed; those of over 50 years' growth are generally so rotten that they are valueless except for fuel.

The crop, which is about 6 per cent. of sâl, is nowhere in excess of 70 per cent. of a full crop, and in places it falls below 50 per cent.

The boundaries of this forest are settled and are in course of demarcation.

(*b.*) Sonaree forest lies immediately south of Nugwa, separated from it by the valley of the Pias; the Mallao flows east and west through Sonaree, parallel to the Pias, and divides the forest into two irregular blocks, the northernmost containing about 16,000 acres, and southernmost about 6,000.

This forest has been even more overworked than Nugwa; considerable areas have been denuded of all but worthless timber repeatedly within the last 50 or 60 years.

The southern block, and the outer shell of the northern block, carry some fine timber, but in smaller proportion and of younger growth than in Nugwa. Sâl is in the proportion of about 70 per cent., but of very inferior quality. The crop of this forest is about 60 per cent. of a full crop, falling to below 40 per cent. in the inner portions.

The boundaries are settled, and the demarcation now in hand.

(*c.*)—Doodhai forest lies about 5 miles south-west of Sonaree, and close to the Pias river. It appears to have been cut over within the last 20 years; in those portions where there has been a thorough clearing, the young growth is very promising, but the greater part of the forest is spoilt by the crooked worthless trees that have been left standing; these interfere materially with the growth of the young shoots,—so much so, that although the forest contains about 70 per cent. of a full crop, and almost enterely sâl, the yield of *fair timber* is not expected to be above 5 per cent.

One small portion of the Doodhai boundary is disputed by a Mr. Palmer, who owns land adjoining; with that exception the boundaries are settled, and the demarcation is in hand.

(*d.* & *e.*)—East Lehra and West Lehra are situated, the former immediately north of Doodhai, but on the opposite bank of the Rohan; the latter, 10 miles west of Doodhai on the banks of the Raptee.

The description of Doodhai is equally applicable to both these forests in every respect.

The boundaries are all settled, and in course of demarcation.

(*f.*)—Bharee Bhysu is situated a few miles to the south-west of West Lehra.

It was cleared off entirely about 20 years ago, and has been replaced by a promising growth of young sâl and sein (*pentaptera tormentosa*) poles, but unfortunately they have been so thinned out that it will require 10 years of close conservancy before the forest will be fully stocked; the sein (asna it is called in Goruckpore) is scarcely inferior to sâl for poles,—it grows so uniformly straight and clean.

(*g.*)—Bhelumpore lies about 10 miles south-west from Bharee Bhysu, and nearly due south of Doodhai. Its conditions are exactly similar to Bharee Bhysu, except that the clearing appears to have been about 15 instead of 20 years ago.

The boundaries of both Bharee Bhysu and Bhelumpore are settled, and the demarcation in hand.

(*h.*)—Banki is situated north-west and almost adjoining Bhelumpore. It is a poor forest, and worth nothing but for fuel. At the last clearing so many low growing and crooked trees of various kinds were left standing as to interfere materially with the young crop; the forest contains a full crop, but so crooked and dwarfed that

it gives but little promise of ever yielding any timber; the proper treatment would be to thin out all crooked trees, but unfortunately the forest is so situated that there is no local demand for such thinnings, and it is too far removed from water-carriage to bring the fuel to distant markets at a cost within the selling rates, so for the present it must be allowed to grow wild.

There are no disputed boundaries, and the demarcation is being proceeded with.

(*i.* & *j.*)—Tilkonia and Ramgurh are situated about six miles from Goruckpore, the former to the north-east and the latter to the south-east of that station.

They were cut over from 12 to 15 years ago, and a sufficient sprinkling of crooked trees were left to mar the prospects of the forests to some extent. Since then there has been a good deal of thinning, and consequently the forest does not carry a full crop, but nevertheless there is a preponderance of *good* stems in proportion to *bad*, and the bad can be cleared out and sold as firewood in Goruckpore, &c.

There ia a small portion of the boundary still in dispute, but it has been enquired into, and will be settled without coming into court. With this exception the boundaries are settled, and in course of demarcation.

During the year, 8,042 acres of grass lands have been taken from the Forest Department and made over to the Revenue Department.

41. SECTION 2.—REQUIREMENTS OF THE SURROUNDING POPULATION—PRESCRIPTIVE RIGHTS.

Kumaon Bhabur Forests.—The original inhabitants of the Terai have the right of getting dry fallen timber of 35 inches in girth and under, firewood, grass and bamboos from Government forests for their own private use, but not for sale; they are restricted to fixed periods of one month in every six, and when coming into the forests they are required to show at some one of the forest chowkees a certificate from the Terai authorities showing that they require, and are entitled to a certain amount of forest produce. On leaving the forests they have to pass out by *the same* chowkee, where their timber, &c., is checked by the certificate, and if found correct, a pass (rowannah) is then given them by the forest subordinate.

The villagers living within forest bounds are on a different footing, but the Commissioner of Kumaon refuses to give a record of their rights until the question of forest rules is settled (see paragraph 31). The wording of the rules will affect the Commissioner's decision as to which portions of the Bhabur forests can be placed in first class and free of all rights and privileges, and which will remain second class or open forests.

The general principle will be, that a sufficiency of forest land will be left open to supply cultivators, and in some cases bazaars, with grazing lands, fuel, grass, and building timber free of any charge; and the forests are quite extensive enough to amply provide for this.

Another, and far more important prescriptive right in these forests, is that possessed by the Nawab of Rampore, *viz.*, 200 cart loads of sâl timber, and 200 cart loads of limestone free of all duty.

The limestone is of no consequence, but the sâl timber is a great drain upon the forests. The matter was explained in paragraphs 65—67 of my Annual Report for 1872-73, so nothing more need be said about it here.

42. The Raneekhet forests are all second class, that is to say, the villagers who formerly had the right have still the right to collect fallen wood for fuel, grass for their cattle, and to graze wherever they please, except in portions which are, with the concurrence of the Commissioner, reserved by the Forest Department, in which case such portions must be fenced.

They also have the right to building timber, but must not take it without written sanction of the Forest Officer in charge, who has the trees selected and marked.

All these rights are for the villagers' private use only, they must not *sell* any of the produce or dispose of the grazing.

In Kumaon the villagers have the same rights they possessed before Government took control of the forests, except that they must not now fell trees without permission.

43. *Gurhwal Bhabur Forests.*—These forests are not encumbered with any rights, except just along the outer range, where there is a little cultivation here and there. The forests in this portion contain no timber of any value, and the small amount of inferior timber, grass, &c., taken by the villagers is quite immaterial.

44. *Dehra Doon Forests.*—In the forests included in this division, the villagers have no *free* rights; but according to the records, which are very confusing and contradictory, it seems to be acknowledged that Government is bound to always supply them with a sufficiency of grazing, firewood, and grass, but that they must pay for it; this has been the custom for some 12 or 15 years, and appears to have now become a prescriptive right.

The forests on the south slope of the Sewalics, which also belong to this division, are subject to the same rights: the villagers must be supplied with grazing, firewood, and grass, but they have to pay for it.

45. *Jounsar Bhabur Division.*—Previous to the commencement of the present settlement, the villagers of this district, although acknowledging the lien of Government on the forests, exercised unrestricted rights over the whole area; under the present settlement these rights have been to some extent defined, as noted in paragraph 31 of this report, in which are given the clauses of the wajib-ool-urz that relate to forests.

The villagers are most amply provided for; they exercise the same rights now as formerly, except that they must not fell certain trees without permission, and that they are entirely excluded from first class forests, which, however, are but a very small proportion of the whole forest area.

There is no necessity to attempt to commute any prescriptive rights, for under the present arrangement the forests are quite enough for all Government purposes.

46. *Forests leased from the Tehree Rajah.*—Mainly under charge of the Bhageruttee Divisional Officer, and partly under the officers in charge of Jounsar and Dehra Doon, the inhabitants of the Tehree State have from time immemorial possessed the right of taking whatever wood or other forest produce they required, and also of grazing free of any charge. When the forests were leased to Government, these annual rights were fully renewed to them by the 3rd clause of the lease.

To regulate the exercise of these rights, the villagers, although assured of their continuance, have been brought to understand that no felling or removal of the valuable kinds of timber, such as deodar, toon, and, in situations handy for export, cheer (*pinus longifolia*) is allowed, except under written sanction of the Forest Officers.

To prevent the extravagant waste of timber as much as possible, a system has gradually been introduced of granting permits for dead trees only; this has now become an universal rule for all forests in which dead trees are known to exist, and is willingly accepted by the inhabitants. It is no hardship to them; numbers of trees die or are blown down annually, and the wood of these is of course just as good and sound as of a freshly felled tree, merely a little more difficulty to split: it is of immense benefit to the forests.

47. The Goruckpore forests are not burdened with any free rights, but the villagers who live near the forests have to be provided with building timber, timber for carts and farm implements, firewood, and thatching grass, for which they pay the Forest Department fair rates. Up to the present time they provided themselves under annual licenses at so much per cart, each description of article requiring a separate license, but the quantity to be removed was not restricted, as it was calculated that under ordinary circumstances a cart would only remove a certain amount, and on that calculation the rate was based.

This would have been a very good arrangement had the villagers been honest, but they have not proved themselves so; their villages are close around the forests, the protective establishment is too insufficient, and the people, finding their operations uncontrolled, felled and removed whatever timber best suited their requirements, without regard to the permission contained in their licenses. They were never permitted to take sâl, but undoubtedly they have done so.

On taking charge of the division at the commencement of 1873-74, Mr. Amery at once discovered these malpractices, stopped the issue of all timber-felling licenses, and prohibited the use of axes for the removal of firewood.

All timber is now supplied to the villagers on indents, and as axes are entirely prohibited in the forests, no harm can be done in the collection of fuel. The villagers are well provided with timber under this new system; they get it whenever they apply, but they only get what they pay for, and this is of course as it should be.

48. Section 3.—Protection.

Nynee Tal Sub-division.—This small sub-division was not mentioned under Section 2, as it embraces but a trifling block of oak and pine forest close around Nynee Tal for supplying that station with timber and fuel, and the villagers' rights are exactly the same as has been described for Raneekhet.

The forests of this sub-division are under charge of the officer who is in charge of the Conservator's office; the protective establishment consists of one mohurrir, who does both accounts and out-of-door work, five patrols, and two chuprassees, whose duty it is to prevent illicit felling, mark trees that are to be cut, and keep a watch on the numerous woodcutters who supply firewood to the residents of Nynee Tal, to see that they neither fell, nor lop branches off, any green trees.

49. *Kumaon Bhabur.*—The Kumaon Bhabur forests are under charge of Captain Campbell, 2nd Grade Assistant Conservator.

The Forest Conservancy Establishment consists of five rangers on Rs. 20 a month each, and twelve patrols on Rs. 6; the forests are divided into five protective charges, each one being under charge of one ranger and two, or in some cases three, patrols.

All the rangers and most of the patrols have been a considerable time in their present employment, and are therefore well acquainted with their respective beats; they are also fairly qualified for forest work, more especially so the rangers in charge of the beats in which Government timber operations have been recently carried on. These men have gained experience in marking trees, procuring labour, &c., and from greater intercourse with their officer have learnt more practical forestry than the others.

The duty of this establishment is to watch the forests, see that the woodcutters who are allowed to export dead timber, do not abuse their privilege by cutting or ringing green trees, that cattle do not stray into reserved portions, cut creepers, burn grassy plains when ordered, mark trees to be felled, and many other works for the conservancy and protection of the forests.

This is a very small establishment in proportion to the area, each beat being over 100 square miles in extent, but still I think it is sufficient under the present system of management.

There is also a Revenue Protective Establishment, consisting of one superintendent of kham tuhseel on Rs. 50, two deputy superintendents on Rs. 25 each, and eight "purtal" chuprassees on Rs. 6 each.

The two deputy superintendents have each a district of over 40 miles in length to patrol, and also have charge of all the kham tuhseel chowkees, from 12 to 15 within their beat; they exercise a general supervision over the kham tuhseel establishments, investigate cases of evading revenue, &c., before sending them on to the officer for final decision, check reports with passes, examine subordinates' books, &c., &c.

The purtal chuprassees are stationed *below* the line of chowkees, at suitable spots on the main roads leading from the forests to the plains, and have to examine all exports from the forests, to see that they agree with the passes granted by the chowkee mohurrirs. They take the "rowannahs" (passes granted by the chowkee mohurrirs) from the exporters, and send them to the Divisional Officer to be checked with the chowkee mohurrir's accounts, giving "mosunnahs" (copies of the rowannahs) to the exporters in exchange.

The superintendent of kham tuhseel exercises a general supervision over the whole of the kham tuhseel establishment of the division; he also does a great deal both in inspecting the forests and investigating cases reported by the lower subordinates; these cases are all *finally* decided by the officer in charge of the division.

Captain Campbell has third class magisterial powers; 199 cases for breach of forest rules came before him during the year, in which 261 persons were implicated, two cases were handed over to the civil authorities, the Forest Officer convicted in 117 cases, involving 171 persons, and inflicted fines, and dismissed 80 cases in which 90 men were implicated.

50. *Raneekhet Sub-Division.*—The conservancy establishment for the Raneekhet forests consists of one head ranger on Rs. 16 a month, two under-rangers on Rs. 12 each, and 10 patrols on Rs. 6 each.

The forests are divided into two beats, each one being under charge of a ranger, and one patrol to each of the forests. As yet nothing has been done towards conservancy beyond preventing trees being felled unless sanctioned and marked by the Forest Department. The forests have only recently been taken over by the Forest Department, and the arrangements are not yet completed.

The sub-division is under charge of Mr. Pengelly, 2nd Grade Assistant Conservator.

51. *Gurhwal Bhabur.*—The Gurhwal Bhabur forests have been under charge of Mr. R. P. Colvin during the year 1873-74.

The protective establishment consists of five rangers on Rs. 20 per mensem each, and 12 patrols on Rs. 6 each.

The forests are divided off into protective charges, and are managed in exactly the same system as in the Kumaon Division; there is also a kham tuhseel establishment organized on the Kumaon principle, and headed by a native superintendent, Purja by name,—the most suitable man for the post that could be imagined.

The divisional annual reports were ordered to be in the Conservator's office by the 25th June, but up to date Mr. Colvin has not submitted his, and therefore I am unable to give any account of the prosecutions for breaches of forest rules in this division.

Mr. Colvin has no magisterial powers.

52. *Dehra Doon Division.*—The Dehra Doon forests are under charge of Mr. Brereton, Assistant Conservator, 1st Grade, assisted by Mr. Sheikh Mohee-ood-deen, Assistant Conservator, 3rd Grade, and Mr. Down, Sub-Assistant Conservator.

The forest establishment consists of—

1 Chief ranger on ... Rs. 30 ...		4 Rangers on ... Rs. 12	
1 „ ... „ 25 ...		3 „ ... „ 10	
2 Rangers on ... „ 20 ...		15 Patrols... ... „ 6	
4 „ ... „ 15 ...		15 „ ... ... „ 5	

The forests are divided off into beats, each beat being under charge of a ranger, assisted by two, and, in some cases, three patrols; these rangers and patrols are required to have a perfect knowledge of the forests in their beats, to be able to point out all the boundaries pillar by pillar, to see that there is no illicit export, and no unauthorized felling, to prevent grazing in reserved portions, &c., &c.

The Dehra Doon Forest Officer has no magisterial powers, in fact none but Captain Campbell have; and he happened to have been granted his just before His Honor the Lieutenant-Governor decided not to grant powers to any Forest Officer until the rules were sanctioned and in force.

There were 13 cases in the Dehra Doon Division, involving 24 persons; they were prosecuted in the District Court and convictions obtained in every case.

53. *Jounsar Division.*—The Jounsar forests are under charge of Mr. Bagshawe, Assistant Conservator, 1st Grade, assisted (at present) by Mr. O. Greig and Mr. Palmer, Sub-Assistant Conservators.

The forests of this division have been divided, for protective purposes, into four circles as follows:—

I.—Kalsee, and forests of the lower khutts.

II.—Deobun, and Banálgád forests.

III.—Dhárágád, and Bawur forests.

IV.—Deogar, and forests leased from Native States.

Each circle is under charge of a ranger, and is sub-divided into blocks, each block being under the immediate charge of a patrol.

There are 4 grades of rangers:—1*st* on Rs. 16 per mensem; 2*nd* on Rs. 14; 3*rd* on Rs. 12; 4*th* on Rs. 10; and three grades of patrols—1*st* on Rs. 8, 2nd on Rs. 7, 3*rd* on Rs. 6.

The protective establishment of this division is very well organized; the blocks are judiciously selected, and evey subordinate has a distinct charge. Their duties are exactly similar to the duties of the rangers and patrols of the Dehra Doon Division, so it is needless to repeat them.

34. Prosecutions for breaches of rules, including 63 persons, have been taken before the Magistrate of the District; in 31 cases, including 60 persons, convictions were obtained, the other three cases are still undecided.

54. *Bhageruttee Division.*—The Bhageruttee Division is under charge of Mr. O'Callaghan, Deputy Conservator, 2nd Grade.

The forest protective establishment consists of one ranger at Rs. 15 per mensem, and five patrols on Rs. 10 each. Each patrol has charge of a beat; his duty is to travel about through the forests under his charge, see that no unauthorized felling takes place, enquire into all requisitions from the villagers for timber before submitting them for the sanction of the Divisional Officer, and keep a general watch over the forests in his beat.

The ranger is a generally useful man; he travels about through all the forests of the division, and is employed on any work that happens to be in hand, such as repairing of roads, bridges, bungalows, &c., superintending gangs for floating timber, &c., &c.

This establishment may appear to be unproportionally small for such a large extent of country, but according to the terms of the lease, the Rajah bound himself to punish offenders against forest rules, and he has dealt so promptly with all cases that have been referred to him, that such offences are now of very rare occurrence indeed, and therefore the present protective establishment is quite sufficient for the purpose.

Besides the above, there is an establishment of one ranger on Rs. 30 a month, and eight patrols on Rs. 7 each, to protect the timber, drift-wood, and waif on the Ganges.

There was only one prosecution for breach of forest rules during the year; the case was tried before a Magistrate and dismissed. The district police discovered some timber in possession of a certain Rajpoot; they at once reported the case to a Magistrate, who called upon Mr. O'Callaghan to prosecute. Mr. O'Callaghan would never have taken such a case into court, for there was no evidence to prove that the timber had been stolen, but that he (to quote his own words) "deemed it wiser to accept the injudicious officiousness of the police, than to have them censured into complete indifference as regarded all forest interests in the future."

55. *Goruckpore Division.*—The Goruckpore Division is under charge of Mr. Amery, Deputy Conservator, 3rd Grade.

The present forest establishment consists of eight rangers at Rs. 8 each, and 24 patrols at Rs. 5 each.

This small establishment is quite inadequate for looking after these forests, surrounded as they are on all sides by villages and private lands.

The rangers and patrols are distributed amongst the forests, and do the best they can to prevent breaches of forest rules; but there are so many people in the forests at the same time collecting firewood, grass, &c., and the villages are so close to the edges of the forests, that when the patrol is at one side any amount of timber may be taken out at the other, and carefully concealed in the villages before he gets round again.

A proposal is now before Government for revising and considerably increasing the establishment of the Goruckpore forests; it was embraced in, and part of, the working plan scheme which was forwarded to the North-Western Provinces' Government under cover of Conservator's No. 131, dated 9th May, 1874.

During the year there were eight prosecutions for breach of forest rules, in which 15 persons were implicated. These cases were all tried in the District Magistrate's Court, and resulted in seven convictions, including 13 persons, and the dismissal of one case, including two persons, for want of evidence.

56. Section 4.—Management and Improvement.

Nynee Tal Sub-division.—The only trees that are allowed to be felled in these forests are cheer *(pinus longifolia)* for building purposes, and a certain amount of oak, rhododendron, &c., for the Commissariat supply of firewood to the Convalescent Depôt. These trees are all supplied on indent, and are selected and marked by the Forest Department.

The windfalls and dead trees are quite sufficient to supply the residents of Nynee Tal with firewood, and no green trees are allowed to be cut except for charcoal for which a certain portion of the most distant forests is selected by the Forest Department annually.

There has been no survey of the forests; there are no division lines, blocks or compartments, plantations, sowings, or cutting of creepers, and no roads or bridges constructed by the Forest Department: nothing of the sort is at all necessary.

57. *Kumaon Bhabur Forests.*—The topographical survey of the country in which these forests are situated is just finished, and the maps, on a scale of one-inch = one mile, are published.

As yet there has never been a valuation survey made of these forests, but a scheme which was started last winter in the Gurhwal Bhabur forests, and is described in paragraph 59, will be continued next winter in Kumaon if the Gurhwal forests are finished in time.

The forests are divided into blocks as noted in paragraph 34, but the boundaries of these blocks cannot be considered finally settled until some decision is arrived at regarding "Forest Rules" for the North-Western Provinces, as explained in paragraph 31 of this report.

There is no regular written plan for the working of these forests, nor can there be until the scheme described in paragraph 61 is completed, for at present the area even of the sâl forests is unknown; but a certain amount of sâl timber is cut annually, calculated on a rough guess of what the forests contain and their capabilities of reproduction, and when a forest has been thoroughly worked it is closed and left at rest.

In the western portion these magnificent forests have been fearfully hacked during former years. About 1853-56, when railway sleepers were first in demand, contractors were permitted to fell wherever they pleased without restriction. The first comers, with a view to keeping out others, and monopolising the profits, felled the sâl trees by thousands in all accessible places, and left many hundreds to rot on the ground; this was all put a stop to in 1858 when the forests were placed under charge of the Commissioner, but the traces are very plainly visible even now.

There has been no extension of these forests during the year, nor is any contemplated; the main improvement of the year is certainly the new system of fire conservancy that was commenced last winter.

It is the universal opinion of everybody who is qualified to give an opinion on the subject, that it is a mere waste of money to attempt to keep fires out of this huge extent of forest; five roads have been made, grassy plains, ridges and the outer slopes of the Sewalic range have been burnt, extra watchfulness enjoined, and many other plans tried in former years, but all to no avail, the fires *will* come; so last winter it was decided to select six square miles of promising sâl forest and preserve it carefully by cutting and clearing horizontal and vertical lines at about a quarter of a mile apart, and I am happy to have to report that, although the season has been a particularly trying one, owing to the rains having ceased very early, and very little having fallen during the winter, it has proved a most complete success.

In this division the work has been done very cheaply, Rs. 524-4-0; and great credit is due to Captain Campbell.

During the current year the system will be extended, and so on year by year, until we get some 30 or more square miles strictly conserved, for without such precautions it is vain to hope for proper improvement of the forests.

These sâl forests are so extensive, and the reproduction, *if fires are kept out*, so good, that it is unnecessary to do much in the way of plantations; a little toon seed has been sown in the Kosee valley near Mohun and at Laiter in the Kotah Bhabur. The seed germinated excellently, but a grub attacked the plants and injured the tops to such an extent that it has been decided not to sow any more there, but to try it on the sites of the two deserted villages of Rampore and Mansanie, where the water supply is good, and plenty of cleared land available.

Creeper cutting has been carried on as usual. During the year there have been cut by rangers and patrols 4,287, and by gangs specially employed 3,012.

The roads in this division are very well laid out; the forests of the western portion will be most completely opened when the lines that were commenced last winter are joined on at their destinations.. The eastern forests, Block VIII. of paragraph 34, are totally roadless as yet, and very fortunate it is so, or they would have been devastated along with the rest.

There is a fair cart-road running from east to west of the division along the foot of the outer range of hills, a distance of 83½ miles, and from this many cart-roads lead to the plains and up through the low hills to the forests; it would be useless to enumerate them in this report, for I could merely give the names of the places they come from and go to, and that would be no information to any one unacquainted with the locality.

A list of the roads, with their distances, &c., is given annually in the Budget Report.

Two *new* cart-roads have been constructed during the year from Aurdanda to Bijranee and from Sawuldeh to Gurjia Sote, each three miles in length and 12 feet in breadth; these are the "commencement of the lines" mentioned above.

58. *Raneekhet Sub-division.*—There are very good topographical survey maps on a scale of 1 inch=1 mile of the country in which these forests are situated, and there was also a rough prismatic compass survey of the forests conducted by Captain Campbell about three years ago, when the Forest Department was first established there.

No valuation or working plan has ever been made, nor is it necessary until a decision is arrived at regarding a scheme which will shortly be submitted for supplying the cantonments with firewood from plantations proposed to be formed in the immediate vicinity of Raneekhet.

The forests have been divided into blocks as mentioned in paragraph 35.

Hitherto the cantonments have been supplied with timber and fuel chiefly from within the cantonment boundary.

Any trees required from "forests" have been carefully selected and marked, both those for cantonments and for villagers; cheer (*pinus longifolia*) is the only *timber* tree; there is abundance of it and no fear of a scarcity.

Firewood is the difficulty at Raneekhet, and as the Commissioner considers that it would be a very great hardship to the villagers to stop fires in the forests, the only plan will be to form plantations sufficient to supply the station, for of course it is quite impossible to produce a supply from forests that are burnt annually. The forests were all burnt this year *as usual*, but it is needless to say more on the subject just now. If the proposed scheme of plantations is approved of, the main part of the forests may be given back; if not, some arrangement must be made to preserve certain portions.

Two fuel plantations have been formed in "forest" land during the year,—one at Ghingároo khál on the Almorah cart-road, about two miles from cantonments; and the other at Jainolee, which is just outside the cantonment boundary. The former is 11 acres 3 roods 24 poles in extent, and was planted with 6,800 walnuts, and 5,192 horse chesnuts; the latter is 6 acres 2 roods 5 poles, and was planted with 4,400 walnuts, 3,190 horse chesnut s, and 870 Australian acacias (*acacia decurrens*) chiefly.

These plantations were formed in December and January; the plants were two years from the seed, and had been once transplanted in the nursery, they were consequently well furnished with rootlets. The expenditure incurred was Rs. 151-1-3; this includes carriage of the plants from the nursery, digging holes, planting, and rough fencing.

Besides the above, 1,250 walnuts, 1,100 horse chesnuts, 314 willows, and 126 acacias were planted on the Kaunpore hill in cantonments, according to a request from the Commander-in-Chief, and enclosed with a mile of wire fencing.

This plantation was also formed in the winter, and the plants were of the same age and condition as those planted at Ghingároo khál and Jainolee. The total cost was Rs. 1,045-3-1, which was debited to the Military Department, and includes about Rs. 900 for the wire fencing.

In July and August, 1873, 21,066 gums (chiefly *eucalyptus globulus*), and 5,710 acacias were planted on a portion of the land that was made over to the Forest Department, and extended a short distance into the cantonment bounds.

A few of the weakest trees were cut by the frost, some killed outright, but most of them to the ground only, and have since sent up shoots from the roots.

There was no *special* expenditure on this plantation; it was done by the nursery and orchard establishment.

I saw all the plantations in June, 1874, and the trees were doing splendidly then.

The following report by Mr. Craw, who is in charge of the Raneekhet nursery and orchard, will show that the propagation of fruit, timber, fuel, and ornamental trees' is being carried on very vigorously, and with most perfect success.

"During the year the following seeds were sown, *viz* :—

	Packets.	No.	Seers.	Source.
Walnuts		44,000		Local.
Chesnuts			320	"
Oak			600	"
Plum			6	"
Pear			2	"
Pinus excelsa			175	Forest Department, Chuckrata.
Cedrus deodara			7	" " "
Eucalyptus globulus			4½	Doctor Von Müellar, Melbourne.
Cordyline indirisi	1			" " "
Arancaria cunninghami	1			" " "
Helecia ternifolia	1			" " "
Cedrus atlantica	1			British Consul-General, Algiers.
Pistacia atlantica	1			" " "
Sweet Spanish chesnuts		5,406		England.

" Owing to the drought, no deodar seed was procurable in Kumaon, and the few seeds obtained from Chukrata have not germinated satisfactorily. The cheel seeds (*pinus excelsa*), however, were good, and germinated exceedingly well; but when very young, and during a short illness of the head malee, the seedlings were incautiously several times watered during the middle of the day when a powerful sun was out, and consequently a good many were scorched and died. The walnuts and horse-chesnuts are germinating satisfactorily.

" Of the 5,406 Spanish chesnuts sown, 4,785 were received from Doctor Watson, Museum, India Office, London; 500 from Messrs. Veitch and Sons, nurserymen, London; and the remainder 121 from General Ramsay, Kumaon Commissioner.

" Doctor Watson's seeds, packed in various ways, some in soft paper, others in dry moss and dry earth, arrived nearly all rotten, mouldy, or dried up, and to date, with the exception of one single seed, which, packed in dry earth, had germinated on the way, not another one has appeared above ground.

" Messrs. Veitch's seeds, packed in powdered charcoal, arrived in equally bad condition, and with those received from General Ramsay have not germinated.

" Should Doctor Watson be again requested to send out Spanish chesnut seeds, I would recommend a portion being sent, immediately the seeds are ripe, by post, packed in oilskin bags, and the remainder *carefully* dried and packed in powdered charcoal previously dried over a *fire*, soldered down in tin cases, and forwarded by the Peninsular and Oriental Steam Navigation Company's parcel post.

"From the two packets of seeds received from the British Consul-General at Algiers, there are 200 fine healthy mastic plants (*Pistacia atlantica*), and 55 *Cedrus atlantica*, but of the seeds received from Docter Von Müeller, Melbourne, the cordyline only has yet germinated: of it there are 550 seedlings. The nuts of *Hilecia ternifolia* (the edible nut) are still fresh, but take many months to germinate.

"Over 15,000 acacia seedlings, from spring 1873 sowing, will be ready to be removed to the forest next rains, also the bulk of the two years' old deodar plants.

"959 worked fruit trees, two years old, have been aded to the orchard, which will save the imported trees from being cut for grafts and buds, and they will henceforth be encouraged in the production of fruit instead of wood.

"The kinds planted are—

Apples of kinds	... 68	Pears of kinds	... 530
Apricots „	... 180	Plums „	... 70
Cherries „	... 111		
		Total	... 959

"The number of fruit trees at present available for sale and distribution, in accordance with His Honor the Lieutenant-Governor's orders, are as follows, *viz.*: —

Apples of kinds	... 350	Pears of kinds	... 1,500
Apricots „	...1,000	Plums „ ...	... 500
Cherries „	... 1,000		
		Total	... 4,350

and the number distributed gratuitously since the formation of the nursery are as follows, *viz.*:—

Apples of kinds	... 254	Pears of kinds ...	... 269
Apricots „	... 108	Plums „ ...	... 57
Cherries „	... 113		
		Total	... 801

and in addition to these the following ornamental trees, *viz.*:—

Gums ...	... 760	Chesnut ...	... 116
Acacias ...	... 2,946	*Pinus excelsa* ...	... 117
Deodar ...	... 272	Willows ...	... 236
Walnuts	144		
		Total	... 4,591
		add	801
		Grand Total,	... 5,392

"Two thousand of the acacias were sent to Lohoghât to be planted in cantonments.

"On account of the drought last autumn, the ordinary work of the nursery was both arduous and trying. Upwards of 250,000 seedling deodar, acacia, &c., were transplanted into nursery lines, but the rains breaking up unusually early, necessitated the hand watering of a large extent of ground all through autumn; and though the work was carefully performed, I regret to state that a number of the seedlings died. The cold weather transplanting of deciduous seedlings, on the other hand, has proved perfectly satisfactory."

59. *Gurhwal Bhabur Forests.*—The recent topographical survey of Kumaon and British Gurhwal includes the portion of country in which the forests of this division are situated, and we have been supplied with capital maps, on a scale of 1 inch to 1 mile.

As mentioned in paragraph 57, we have nothing in the shape of a valuation survey of the sâl forests of the Kumaon and Gurhwal Bhabur: we do not even know how much of the area of our forest lands is covered with sâl forests in contradistinction to scrub and grass jungle.

The first step to be taken towards a valuation, is to find out how much of the land is clothed with forest, and with this object in view I consulted Captain Bailey, the Superintendent of General Forest Surveys and Working Plans, and we decided that the simplest way would be to depute one of the trained Assistant Conservators to demarcate all the sâl forests, one by one, with temporary marks, and to keep descriptive memoranda of the boundaries, so that a survey party would have no difficulty in following up the lines at some future time. The forests demarcated, Captain Bailey's party would then commence the survey.

If I understood Captain Bailey rightly, he would begin by preparing skeleton sheets, enlarged to a scale of 4 inches to 1 mile, from the Topographical Survey Department maps of Kumaon and British Gurhwal, with all the trigonometrical stations marked, and also the chief rivers, water-courses, and roads. A sufficient number of the temporary demarcation marks of each sâl forest would then be attached to known trigonometrical stations, the blocks surveyed, and then plotted on to the map.

The scheme was approved by His Honor the Lieutenant-Governor, and Mr. Whittall commenced the demarcation work in December last.

He began on the left bank of the Ganges and worked eastward.

By the beginning of May he had demarcated all the sâl forests as far eastward as Kotdwarra. In November he will begin again where he left off, and will perhaps be able to do the remainder of Gurhwal and up to the Kosee river in Kumaon during the working season of 1874-75, and the rest of Kumaon in 1875-76.

It is a most laborious work, for it has nearly all to be done on foot; and struggling through the heavy jungle on those low hills during the months of March, April, and May, is very trying indeed, and it is also a work that requires a very great deal of judgment, for it is no easy matter to decide where a sâl forest begins and where it ends in those immense dense jungles.

Six square miles of sâl forest in this division were selected for fire conservancy on exactly the same principle as described in paragraph 57.

Orders were issued at the same time as for Kumaon and Dehra Doon, but were not *at once* attended to; the work was delayed until late in the season, and, I believe, was not done either well or economically: the result will be reported in the Annual Report for 1874-75.

The working of the forests is on the same system as in Kumaon: a certain amount of timber is cut annually, calculated on a rough guess of the supposed annual yield.

Khair (*acacia catechu*) having become rather scarce towards the western end of the division, and there being a great demand for that timber and plenty of suitable land available along the left bank of the Ganges, some seed was sown in a nursery during last March; the result will be mentioned in the report for 1874-75.

The toon and khair sowings of 1872-73 have turned out fruitless. The seed was sown broadcast; the khair never germinated, the toon came up very well, but was destroyed by grubs almost immediately.

As in Kumaon, there is no necessity for much in the way of plantations in these forests; there is an abundance of sâl-bearing tracts quite sufficiently covered with old trees for reproduction purposes, and that would soon be clothed with a dense undergrowth of young sâl, if we could but exclude the annual fires. The small sâl forest of Korea, close to Gowreeghât on the Ganges, is good evidence of this; for the last three years it has been preserved, and the improvement is wonderful, in most places the young sâl saplings are as thick as they possibly could be.

There were no new roads made during the year; the old ones were kept in repair, but not in very good repair, judging from the one running through the Patlee Doon, and the one from the Kotree Doon to Sunnaye, when I saw them in March last.

60. *Dehra Doon Division.*—The survey of these forests is being conducted by Captain Bailey, R.E., Superintendent of Forest Surveys and Working Plans.

Paragraph 37 described the blocks of forests; wherever necessary, lines have been cut to demarcate the boundaries, and these are cleared as occasions require.

The Dehra Doon forests have been so fearfully overworked in former years, that it was decided last year to stop all cutting of sâl; dead sâl trees are removed and sold, and scantlings of sein (*pentaptera tomentosa*) and inferior woods are prepared in the forests, carted to a depôt, and then sold. A good deal of inferior timber in the shape of poles is also supplied to the Ganges Canal, for use in the head works.

All felling of sâl timber having been stopped, we can well afford to wait for the completion of the survey before drawing up a working plan for these forests.

Here as in Kumon, the main improvement of the year is the new system of fire conservancy. Six square miles of the most promising sâl forest on the northern slope of the Sewalics in the Eastern Doon were taken in hand, and divided into 40 acre compartments; Mr. Brereton reports that the work was not quite completed when he wrote his Annual Report, and therefore he will record the result in his report for 1874-75. As in Kumaon and Gurhwal, the fire conservancy will be considerably extended in the Doon during the current year. A portion of the six square miles preserved in 1873-74 has been unburnt for two years previously, and I am very anxious to see it again next autumn, for the *third* year is the one when there is such a marked improvement in a sâl forest.

The only plantation made in the Doon during the year under report was a small one in Lucheewalla (a portion of Nagsidh): an acre of ground was prepared and sâl seed imported from Gurhwal sown during June; from some cause, faulty seed picking most likely, none of the seeds germinated.

There is no necessity for plantations in this division, the reproduction is wonderfully good, and the sâl forests would be densely covered with seedlings and root shoots in a very few years could but fires be prevented, but it is perhaps even more hopeless here than in Kumaon and Gurhwal on account of the greater number of villages, cattle, roads, and travellers, it would be impossible to keep out fires except by a regular system of cleared lines as has been commenced this year.

A further sum of Rs. 400 has been paid to Colonel Angelo, the officer commanding at Landour, for the plantation work mentioned in paragraph 41 of the Forest Report for 1872-73, Colonel Angelo states that 1,800 trees have been planted out in the cantonment of Landour during the year, but that owing to the very severe winter the proportion of deaths has been larger, and also that some damage has been done by sheep and goats. The trees planted during the 1872-73 are reported as doing well.

The cost of this year's operations has been Rs. 200, so that there is a balance of Rs. 200 still with Colonel Angelo. This is not a fair charge on the Forest Department, it should be borne by the Military Department; I will write about it.

Creeper cutting was carried on as usual. Last year I reported that eight square miles had been cleared, this year 4½ square miles have been cleared in the Nagsidh forest and 2¾ square miles in Timlee and Ambaree; the former was done by gangs under charge of a subordinate, and cost Rs. 30 per square mile; the latter by contract, cost only Rs. 25, and was just as well done. Nagsidh, which three years ago was a perfect network of creepers in most parts, is now nearly clear of these pests, and looks very much better for it; even in the portions that were cleared three years ago the creepers have made but little way yet; the cutting seems quite to check their growth. Many of them certainly have sent out their shoots from the roots, but not the strong vine one would expect to see from the maljan (*B. racemosa*), and I am in hopes that in a few years' time the forests will have become so well stocked with young trees, that the maljan will do no further harm; it cannot thrive without plenty of light, far more than there ever should be in a sâl forest.

In the Doon the Forest Department has no roads, &c., to keep up; all main roads are under charge of the Public Works Department, and the cart tracks never seem to require any repair.

Jounsar Forest Division.—The whole of this district was surveyed years ago by the Topographical Survey Department; the maps are on a scale of between 4 and 5 inches to the mile. A valuation survey of most of the principal deodar forests was made during 1872-73. There are no division lines, blocks, or compartments in these hill forests, nor are any necessary.

There has been very little felling during the year; a few deodars were cut in the Konain forest for supplying timber to military works at Chukrata, and also some oak and fir trees in Pandawa for lime burning. The forests are systematically worked one after the other, and all trees to be felled are selected and marked by a Forest Officer.

The only difficulty in this division is the supply of firewood to Chukrata; the amount required can always be given, but the high rate of labour, and the steepness of the hills make the export charges very heavy; with a view of trying to reduce the price to the very lowest limits, a valuation survey of the forests within an eight miles radius of Chukrata has been commenced, and then we may perhaps be able to devise some scheme of tramways to reduce the cost of carriage, but I have not much hope. Six miles will be, I think, about the average distance, and as the nature of the ground is so very unfavourable for tramways, I fear the price will never be much below about 7 annas per maund delivered in the station.

Fire conservancy has again been very successfully carried out in this division; the general rule—there are a few exceptions—is that each block, a patrol's charge, is divided into two portions, one of which is given up to be burnt, and the other preserved from fire by burning lines round the edge as soon after the rains cease as possible, and in some few cases it has found necessary to subdivide the blocks by cross lines.

The area of plantations in 1872-73 was 520 acres 1 rood 10 poles, and the cost Rs. 5,596-6-0. During 1873-74, 77 acres 2 roods 9 poles were added at a cost of Rs. 1,963-3-5. The following is a short description of the several plantations in the order given in last year's report.

Boodyar.—This plantation has been extended and now covers an area of 123 acres 3 roods and 15 poles; there is also a nursery of $\frac{3}{4}$ of an acre. It consists entirely of deodar, and was formed partly from seed sown in lines in the forest, and partly from self-sown transplants. I saw the plantations in October and again in April last, and do not think it looks very promising as yet, but there are sufficient trees now alive to cover the ground well if they all grow to maturity. The nursery is to supply vacancies in the plantation *Ranásur* (called last year *Koti*).

This plantation, including nursery, is 119 acres and 14 poles, of which 19 acres and 3 poles were added during the year. The lines which were sown and planted during 1872-73 and 1873-74 looked no worse in April last than they did in November, and are slightly more promising than at Boodyar, the soil being damper. From some unknown cause the nursery that was formed during 1873-74 has proved an utter failure,—not more than about 500 deodar seeds having germinated. Kanásur is entirely of deodar.

Konain.—This plantation is 85 acres 1 rood 30 poles, including nursery. The seed sown in the nursery beds during the year has not germinated very well, but the plantation was looking rather promising in April last, far better than it did in November: 39 acres 1 rood 6 poles were added during the year. Konain is a deodar plantation.

Káiyan (called in last year's report Chijal).

The total area is 214½ acres, of which ½ an acre has been added during the year. This plantation was looking tolerably well in April last, but there are many vacancies.

The ½ acre added during the year is a nursery to supply vacancies; the seed was coming up very well in April. This also is a deodar plantation.

Koti (called Koti Bawar in last year's report).

The lines here are a perfect failure, the soil is too dry for such a rough system of reproduction. About a ¼ of an acre of nursery formed during the year is all that remains of the Koti plantation, so the 25 acres reported on in last year's report may be struck out of future statements.

Experimental nurseries.—In the one between Tewrie and Maindrot the young deodars were transplanted into other beds during the winter; and although they appeared to do well at first, they were nearly all dead in April, the few remaining will be planted out in the forest, when fit. Some more seed was sown in one of the beds last December, but it did not germinate. At Onole none of the seed germinated.

Mundholi.—This plantation consists of 11 acres of deodar, sown as described in last year's report. In October, it appeared that but a very small proportion of the seed had germinated, but the weeds and grass were so high then that it was difficult to see the little trees. Mr. Bagshawe now reports that "the area sown is covered" with sufficient seedlings for a full crop, and in parts the plants are too thick;" none was added during the year.

"The experimental sowings at Deobun" are now comprised in the Deothát plantation. In the experimental nursery near Deobnn some maple and horse chesnut seed was sown; the former did not come up very well, but there is a splendid crop of young chesnuts.

The total of Deothát plantation is 16 acres, of which 15¾ were added during the year. About 14 acres of this is forest land sown with acorns dibbled in at about two feet apart: this portion looks very promising as yet. The remainder of the plantation consists of nursery beds in which acorns were sown, but they were gathered a little too late, I fear, for very few germinated. I examined numbers of them in October, about a month after they were sown, and every one was bored through by insects and the germ destroyed.

Paniawa.—This is a nursery of ¾ of an acre, formed with a view of planting open glades in the fuel forests. It was very carefully prepared, and sown during the winter with different kinds of fir seed, but hardly any have germinated.

Malkangra.—This is also a nursery for fuel trees; it measures one acre, and in September last, was sown with acorns, which have come up well.

Kornwa.—This is a small nursery of about a ¼ of an acre, formed as an experiment to try whether the Australian acacias will do as well here as at Raneekhet. 800 seedlings were got from Raneekhet in March, and Mr. Bagshawe reports that *in June* "two-thirds of the trees look very well indeed."

They were brought over rather late in the winter which will account for the death of one-third of the total; but there are quite sufficient left to test the suitability of the climate and soil. If they thrive, I propose to make extensive plantations of acacias in the fuel forests south of Chuckratta which are now filled with a lot of hollow worn out oaks that are decaying more and more every year.

There is no need for creeper cutting in this division, except in the small portion of sâl forest between the outlets of the rivers Tonse and Jumna. Work was commenced in March last, but, as only a few acres had been cleared by the end of the financial year, it will not be reported on in this year's report.

All the forest roads in this division have been repaired and kept fit for traffic during the year. Three of the roads which are greatly used for carriage of fuel to Chukrata have been widened, and parts metalled with broken stones.

The following new roads were made :—

Duráni to Kailo	4 feet wide	...	...	... 9 miles.
,, to Kánásur	4 Ditto	...	...	... 6 ,,
Kutyan to Koti	2 Ditto	...	...	... 3 ,,

These eighteen miles of road cost Rs. 2,136-0-7—very cheap work considering the amount of blasting that had to be done.

The Tonse bridges have been repaired where necessary, but no new ones put up.

The following new buildings have been erected during the year :—

1*st*.—A chowkee at Dhalipore in the Dehra Doon, on the left bank of the Jumna, for the use of the office during the time the officer in charge of the division has to be in the Doon looking after his sawing, floating, rafting, &c.

The building is of sun-dried bricks, and roofed with deodar shingles.

2*nd*.—A godown at Chukrata, pucka masonry—stone and lime walls, and deodar shingle roof. This is a very useful building; it does both for godown and temporary residence when required. The Forest Officers often have work at Chukrata, and if it was more than they could perform in the day, they either had to return to Deobun and go down again the next day, or stay with some friend for the night, for there is no dâk bungalow or hotel at Chukrata.

3*rd*.—A small rest-house at Maindrot on the Tonse, of dry stone masonry walls and deodar shingle roof. This little house is very conveniently situated for the Forest Officers when visiting any of the works on the Tonse, or in the Mindhole or Lambatach deodar forests, or making up the accounts of the Maindrot granary: it is also useful for travellers marching between Simla and Mussoorie.

The total cost of these three buildings was only Rs. 1,963-14-4. The work was carefully supervised, which accounts for the cheapness of it.

Rs. 225 were spent in blasting some rocks near the rafting station at Dagh-pathar on the Jumna, and clearing the river in a few places to make channels for the rafts to pass when the water was very low.

Bhagaruttee Division, Leased Forests.—The Topographical Survey maps, on a scale of between four and five inches to the mile, are the only ones which embrace the forests of this division, except some valuation survey maps which were made in 1870 by Mr. Grant of the Forest Department, of the Tongnore deodar forests at the head of the Bhagaruttee, and which, by subsequent fellings, were found to be rather incorrect.

The forests are well-defined by natural boundary marks, and as they are not the property of Government, it has been considered unnecessary to go to any expense in demarcating them by either pillars or lines.

The improvement and extension of these forests by plantations was at one time contemplated, but when the Rajah declined to assist the Forest Department in procuring favourable sites handy to the river, and also declared his disinclination to renew the lease at its expiration, it was decided that it would be safer to confine such costly improvements to *bonâ fide* British territory.

The Bhagaruttee valley road, with its suspension bridges, has been the chief work for the development of this division.

It has been most fully reported on at various times, and therefore it will be unnecessary to say much about it here. It has rendered safely and easily accessible, forests which could only be reached by excessively toil some marches, in the course of which many unsafe bridges and dangerous precipices had to be traversed. As this road runs through the heart of the Tangnore deodar forests, and the Jodh Gunga is now passable by an excellent suspension bridge, 284 feet in span, and 400 feet above the water, no other forest paths or communications will be necessary.

Floating operations have been much facilitated by blasting out some isolated rocks here and there, but chiefly by so removing a serious and solid obstruction just above Dangulla, where logs used formerly to collect until they entirely blocked all floating, and were only set adrift again by the severest labour. A good deal more, however, might be done if sleeper works are again commenced on a large scale in this valley.

All the main ropes of the wire suspension bridges received a thorough coating of anti-corrosive paint during the year ; and, when carefully examined by the Divisional Officer in October last, the bridges were, to all appearance, as sound and serviceable as when first set up.

63. *Goruckpore Division.*—The Revenue Survey maps show these forests very fairly—much better than those of the Topographical Survey Department.

During the year division lines of 35 feet in width have been cut in the forests of Nugwa, Sonaree, and Ramgurh, dividing the two former into blocks of about 700 acres each, and the latter into blocks of about 300 acres. This has greatly facilitated inspection, and a careful measurement of the wood felled in these known areas has furnished reliable data for a valuation and working plan.

The plan of operations regarding the felling of mature timber and thinnings was fully described in the working plan now before Government, and mentioned in paragraph 57 of this report, so it is useless to repeat it here.

When Mr. Amery assumed charge of the division during the summer of 1873, he found very few sâl trees then alive in the nurseries, but the Katung bamboos, of which there are about 500 plants, were doing well. One of the first things that struck Mr. Amery was the great advantage that would be derived by substituting seedling trees for the existing coppice shoots in the Ramgurh sâl forests. With this view, and by way of trying the most simple and cheapest plan first, he made a light thinning of 70 acres where the trees were too young to shed seed, and during the month of June dibbled in sâl seed at three feet apart. The unusally dry season was unfavourable to germination, but in the following December he was delighted to see that there was a perfectly uniform crop of one plant to every six feet square, and all looking very healthy and promising. Then occurred a long drought, and by the end of February, when I was on a tour of inspection in Goruckpore, we found that a very large proportion of these seedlings had died.

This experiment has decided us not to attempt hand sowing in the forest again, but to raise the seedlings in nurseries, and not plant them out in the forests until they have been twice transplanted in nursery beds and are two years old; they will then be furnished with a bunch of strong rootlets, and we hope be sufficiently vigorous to withstand all climatic influences.

Plantations have been formed, but as they were not completed within the financial year they will be reported on in the annual report for 1874-75.

As, according to the working plan, the Sonaree Forest is one of the first to be put in proper order, it was decided not to spend more money in cutting creepers there, as they would be all cleared out at much less cost during the timber operations, and they had already worked nearly as much harm as possible, so the gangs were transferred to the promising young sâl forests, Bhary, Byree and Bhillumpore, where the anticipated benefit amply justifies the expenditure.

Clearing the bed of the Pias for a distance of eight miles from the Jignahwa ghât to the heart of the Sonaree Forest, so as to make it navigable for timber rafts, was taken in hand at the close of the year, as it was found that by this course the cost of carriage of the wood from the division lines would be much less than *carting* it to the ghât.

There are no roads, bridges, or canals that have to be kept up by the Forest Department in this division.

---

64. SECTION 5. YIELD AND WORKING OF THE FORESTS.

Nynee Tal Sub-division.—The actual yield of the forests of this sub-division during 1873-74 is as follows :—

Cheer (Pinus longifolia) trees bought by contractors and others for building purposes						Rs.	359
Oak, and other trees supplied to the Commissariat Department, for firewood						„	634
Ditto	ditto	to lime-burners		...	...	„	408
Ditto	ditto	to private individuals		...	...	„	26
Contract for cheer tar from stumps of trees				...	...	„	80
Royalty on 51 acres of potatoe and wheat cultivation					...	„	254

All the produce of these forests is consumed in Nynee Tal. There are no depôts. The trees are sold on indent selected and marked by the Forest Department. The tar manufacture is sold on contract; it is made from old stumps, and no trees are allowed to be cut. The cultivation is leased annually; the rent hitherto taken is Rs. 5 per acre.

65. *Kumaon Bhabur Forest.*—The amount of timber felled in these forests during the year is :—

(a.)	Sâl timber	38,639	cubic feet.
	Other timber	16,842	„

Besides the above, the following amount of *dry* timber was removed by purchasers :—

(b.)	First class timber...	203,001	cubic feet.
	Second class timber	23,318	„
	First class tors and golahs (poles) ...	964¼	scores.
	Khair (Acacia catechu) ditto ...	1,395 3/20	„

(c.) About 140,000 cubic feet of miscellaneous timber (chiefly sâl) was exported from forest lands that are being cleared for cultivation.

(d.) And about 20,000 cubic feet of sâl, *free of duty*, for the Nawab of Rampore (*vide* paragraph 34).

(a.) All trees are selected and marked by the Rangers and Patrols, under the direction of the officers in charge of the division, and all felling is done entirely by Government agency. The timber prepared during the year was chiefly sâl kurrees, the produce of trees in steep and almost inaccessible places—the remnants of the fellings of previous years.

The timber operations were carried on in Doorgadeh, Kooriakurruck, and all the forests on both banks of the Kosee river in the neighbourhood of Mohân. These forests have now been completely worked, and will be closed for reproduction; the best portions being selected and carefully preserved from fire by the system of division lines described in paragraph 57.

The remainder of the timber prepared consisted of sâl beams, sâl sleepers, sâl planks, sein (Pentaptera tormentosa) kurrees, and kokât (inferior woods) timber.

All this timber was sawn in the forests, carried to the nearest cart-road, either by men or bullocks, according to the nature of the ground, and then carted to depôt.

(b.) This timber is all from dead trees, the residue of former timber operations, windfalls, landslips, &c., &c. Certain controllable portions of the forests are opened for the export of dry timber; merchants are allowed in, who remove all that is worth removing, and export it to the plains *viâ* one of the Forest Department kham tuhseel chowkees, where the timber is measured and royalty taken according to a fixed scale of rates, varying in proportion to size and quality.

Other forest produce, such as bamboos, grass of many kinds, honey, wax, medicinal herbs, khair (a catechu), pestles for sugar mills, &c., &c., are exported in the same way. Catechu is also allowed to be manufactured in certain forests from the khair tree, but as it involves great waste of wood, and does not pay so well as the pestles, and the khair forests want rest, it has been greatly restricted during 1874-75.

No person is allowed to collect minor produce or dry timber during the rainy season. The chowkees are removed about the 1st July, and re-established about the 1st of November.

(c.) There are usually some portions of the forests between the foot of the hills and the Terai that are being cleared for extending the Bhabur cultivation.

The Commissioner gives the Forest Department notice that a certain patch must be cleared of timber within a given time; the Forest Department then issue a notification to say that in this patch any kinds of trees may be cut and exported at certain rates. These rates are generally fixed at so much per bullock, and calculated at rather less than the ruling kham tuhseel rates of the year; the object being to get the wood removed as speedily as possible.

Captain Campbell found that it was far better to charge on the bullock than to make the exporters unload their carts at the chowkees to have all their goods measured or weighed. He introduced this system in 1871-72, and it has found great favour with the merchants, and therefore increased the revenue under this head considerably.

There is but one timber depôt in this division; it is at Ramnuggur, which is situated 16 miles west of Kaladoongee, at the exit of the Kosee river from the hills. The depôt establishment consists of one mohurrir, one jemadar, and three chupprasies: their duty is to keep account of the arrival and despatch of stock, and be answerable for its safe custody at the depôt.

The principal lines of export from the Kumaon Bhabur forests are from the neighbourhood of Ramnuggur to Moradabad, and from the neighbourhood of Huldwanee, Chougullia, and Burmdeo, towards the districts of Moradabad, Bareilly, and Phillibheet.

There is no difficulty in disposing of the timber in depôt. During the year the following amount has been sold :—

Sâl logs	... 1,515 = 70,878	cubic feet.
,, kurrees	... 40,417 = 62,940	,,
,, other pieces	... 1,025 = 1,908	,,

The Ramnuggur depôt is very well known now. People wanting to purchase timber either write to the officer in charge of the division, or come to Ramnuggur and select it themselves. There are fixed rates for logs, but the price of sawn timber fluctuates according to the demand.

The amount realized from fellings and thinnings, and from sale of other forest produce, will be given under "financial results."

66. *Raneekhet Sub-division.*—The yield of these forests during the year is as follows :—

	CHER *Pinus (longifolia.)*		
	Mature trees.	Large poles.	Small poles.
Supplied to purchasers ...	698	355	1,513
,, free to villagers ...	701	2,906	3,689

,, ,, ,, of oak 1,676 trees for ploughs, and about 9,000 maunds of firewood from fallen wood.

The trees "supplied to purchasers" were all for the Raneekhet cantonments, chiefly for the military works. They are all selected by the Forest Officer and marked, purchasers taking them over *standing*, and converting them into scantlings on the ground.

The firewood was also for cantonments.

The reason that there has hitherto been such a small demand from our forests is that there was such a quantity of timber and fallen wood within cantonment limits. This supply is now almost exhausted, and during 1874-75, the Forest Department may expect a much heavier demand.

The villagers' trees are supplied on indent free of all charge. They submit indents to the Forest Officer; he enquires into the requirements and cuts it down, if necessary, then writes his order on the missile, and returns it to the villager, who then takes it to the Patrol in charge of the forest in which the trees are given, and he marks them and points them out to the applicant.

The amount of revenue received from sale of trees and other forest produce will be given under "financial results."

67. *Gurhwal Bhabur Forests.*—The following is the yield of these forests during the year :—

(a.)	Trees felled, sâl	278	number
	„ „ other kinds	7,318	„
(b.)	Brought to depot, sâl	59,611	cubic feet.
(c.)	„ „ other kinds	23,689	„
(d.)	Timber removed by purchasers—		
	First class	4,826	„
	Second class	134	„
	Ditto, tors and golas	1,334	scores.
	Ditto, khair pieces	863	„

(a.) The trees are all selected and marked by the Rangers and Patrols, and the felling, sawing, &c., is done departmentally, as in Kumaon. *(b.)* The timber prepared consisted chiefly of kurrees of the ordinary length, from 8′ to 15′, the sâl for depôt stock, to meet the usual annual demands, and the "other kinds." *(c.)* Chiefly for the plains' depôts at Meerut, Cawnpore and Calpee, which were established during the early part of 1874-75, and will be reported on in the next annual report.

(d.) This timber is exactly the same as has been described under *(b)* of the previous paragraph, and is controlled and exported under exactly similar conditions. Not having yet received Mr. Colvin's report, I am unable to give his reasons as to why the revenue under this heading (A.II.) is so very small, but I conclude that he did not allow sufficient portions of the forest to be opened for export.

The minor forest produce is exported under kham tuhseel, exactly on the same system as in Kumaon.

The following amount of sâl timber has been sold from depôt during the year :—

Sâl logs	6,703	cubic feet.
„ kurrees	24,855	„
Other pieces	3,911	„

The depôt of this division is at Sanaye, a central spot at the foot of the outer range with fair cart-roads leading from it to the plains in every direction.

There is a fixed price for logs, and the scantlings are sold to any merchant who makes the best offer for them.

The amount realized from sales of timber and minor forest produce will be given under "financial results."

68. *Dehra Doon Division.*—No sâl timber was felled during the year, but a portion of the forests leased from the Tehree State, on the right bank of the Ganges near Sheopoori, was worked.

The work was placed under charge of Mr. Down, Sub-Assistant Conservator. He commenced about the middle of December, and by the end of the year 1,128 sein (Pentaptera tormentosa) trees had been felled, and 10,973 kurrees, from 8½ to 15 feet, prepared and carried to a temporary depôt at Sheopoori. These were all cut on indent for a native timber merchant at Meerut.

In addition to the above, the following amounts of kokât (inferior wood) and dead timber were sold during the year :—

Kokât timber, to the Northern Division, Ganges Canal	Rs.	4,206	2	5	worth
Ditto ditto, to Eastern Jumna Canal ...	„	867	0	0	„
Ditto ditto, to Executive Engineer, Chukrata road	„	3,086	4	0	„
Ditto sold from depôts	„	1,990	0	0	„
Duty on dead wood removed by purchasers ...	„	6,402	13	6	„

The three first items were cut on indent, the fourth sold to merchants, and the fifth removed by purchasers on permit.

The minor forest produce revenue is realized partly by leases and partly by collections at chowkees. The lease system was introduced in 1871-72; in 1872-73 the contractors seemed to be rather shy, but this year there is a marked improvement. Rs. 6,080 have been realized, against Rs. 4,710 during the previous year; there is also a marked improvement in chowkee collections " entirely due to the vigorous and careful supervision of Mr. Sheikh Mohee-ood-deen, Assistant Conservator," as reported by the officer in charge of the division,—Rs. 15,841 were realized, against Rs. 8,739 in 1872-73.

The timber in this division is generally cut on indent, and therefore none but temporary depôts are required; there is, however, one depôt at Doodhia, on the left bank of the Ganges, where timber is usually delivered to the Ganges Canal Officers and to merchants, but no stock is kept there; it is merely a cleared bit of ground where purchasers are allowed to store their timber during the time they are making arrangements for rafting it down the canal or river.

69. *Jounsar Division.*—During the year the following trees have been felled :—Deodar 108, spruce and silver fir for scaffold poles 367, for fuel 55 fir and 71 oak, besides thinnings of the Pandowa oak forrest. No count was kept of the dead trees that were felled for fuel.

The timber works in hand during the year were as follows :—

(*a.*) Supply of timber to Chukrata.
(*b.*) Supply of fuel to Chukrata.
(*c.*) The Tonse sleeper works.
(*d.*) The Doon timber works.
(*e.*) The Doon fuel works.

(*a.*) During the year, 5,501 pieces of timber, valuing Rs. 11,241-1-5, were supplied to the military works, and 5,907 pieces, valuing Rs. 4,717-5-0, were sold to privote persons in Chukrata. The timber is prepared in the forest, and then carried to the Forest Department's depôt at Chukrata by coolies.

(*b.*) 30,000 maunds of fuel were cut, stacked, and made over in the forest to the Commissariat Department; 28,000 maunds were carried into Chukrata and delivered to the Commissariat Department; 7,000 maunds were carried to Chukrata for station use; 35,000 maunds at Pandava, and 5,000 maunds at Kalsee, were cut, stacked, and made over to the Public Works Department, Military Works, of Chukrata.

The entire supply of fuel to the station of Chukrata has now been undertaken by the Forest Dapartment.

(*c.*) No trees were felled, but 2,500 deodar logs, and 222,573 deodar sleepers, the produce of former fellings, were launched from the forests, leaving only 3,746 sleepers in the hills, and these in depôt on the river bank.

A Dr. and Cr. account of the Tonse sleeper works, from the time they were first started up to the 31st March, 1874, shows that 396,219 sleepers of different sizes had then been delivered to the railway authorities, and 89,120 remained in stock ; and that the price realized for, and estimated value of, these amounted to Rs. 9,88,180-3-0. The expenditure side, after allowing a fair estimate for cost in delivering the sleepers "in stock," shows a total of Rs. 7,69,209-8-3, so that there is a balance in favour of the works of Rs. 2,18,970-10-9, which is exceedingly satisfactory. All *forest* work connected with these sleepers will be finished during the current year (1874-75), but many of the sleepers that are now being prepared from the remaining logs in the leased forests of Lambertach, Deota, and Dartmir, will not be delivered to the railway authorities until 1875-76.

(*d.*) 3,128 deodar logs were caught in the Doon during the year, also 272,573 deodar sleepers, and 617 cheer (Pinus longifolia) logs.

The deodar logs were sawn into sleepers for the Muttra Provincial Railway, but were not all despatched before the 31st March, 1874.

The sleepers were sent as follows :—

To Agra, six feet sleepers,	...	...	...	106,645
„ Muttra „	...	...	...	10,000
„ Delhi „	...	...	...	77,205
„ „ half „	...	...	...	13,165

It is very satisfactory to know that the natives have at last begun to purchase *cheer* timber, and the officer in charge of the division now anticipates a steady demand. Rs. 37,414 worth was sold during the year, against Rs. 13,241 in 1872-73. The selling price for cheer scantlings *at Delhi* is 12 annas per cubic foot.

(*e.*) 234,000 cubic feet of firewood was supplied to the head works of the Western Jumna Canal. Part of this was waif and stray from the Jumna, mixed with waste wood from sawings, and the balance was of hard wood from the Western Sewalic forests.

In minor produce there is a decrease of Rs. 573 in permit fees; an increase of Rs. 605 in grazing dues, and of Rs. 31 in fruits, &c. The revenue is collected at Kalsee, the only chowkee in the division.

There are three depôts in the division, *viz.*, one at Chukrata, and two on the Jumna in the Doon.

The Chukrata depôt "at Morrows neck" is for both fuel and timber. It is under the immediate charge of the Deobun Sub-divisional Officer, assisted by a mohurrir and a chowkeedar. The mohurrir is answerable for the stock in hand; he gives receipts for all that comes in, and takes receipts for all issues. These receipts are then submitted to the Forest office and accepted as vouchers. One of the Jumna depôts is at Dagh-puttur, just below the junction of the Tonse and Jumna. Sleepers sawn in the forests on the Tonse are collected here, and, after examination, are rafted and floated down to the different State railways.

The other Jumna depôt is at Rampore Mundi. The logs that have been cut up in the hills are collected here, as much as is possible, and converted into scantlings for miscellaneous demands.

These Jumna depôts are under charge of the Doon Timber Works Sub-divisional Officer, assisted by a mohurrir, a jemadar, and a staff of chowkeedars.

70. *Bhagaruttee Division*—There has been no felling in the forests of this division during the year, but the following is a summary of the amount of timber, &c., disposed of from part remnants of former operations, and collections of waif and driftwood.

Deodar railway sleepers	... ...	143,634
„ refuse from sawing	... ...	78,881 maunds.
Waif and driftwood fuel	... ...	24,869 „

and Rs. 369-3-0 realized from drift timber and bamboos found embedded in the sand.

The sleeper operations is the only work of any importance in this division. It has been done entirely by contract, and by one of the very best contractors (Mr. F. Wilson) that Government has ever employed. Nothing could be more satisfactory than the faithful and business-like manner in which Mr. Wilson has carried his contract through to such a successful termination ; his sensible arrangements, cheerful manner, and ready compliance with instructions, have gained him great favour and esteem with all the Forest, Railway, and other Officers that his business has brought him into contact with.

A short resumé of this sleeper work may not be considered out of place here.

The work commenced in 1869. There were then 5,000 deodar logs belonging to Government *in the river*, which Mr. Wilson took over at Rs. 6 per log; but as the cost incurred by Government in getting these logs to the river, is not known, this item will not be entered in the following account. It will be surmised that the selling price just balanced the expenditure.

Mr. Wilson felled altogether	...	27,362	deodar trees.
Ditto logged of Government fellings		1,250	ditto
Total	...	28,612	
These 28,612 trees yielded	...	100,448	logs.
Add—Taken from Government by Mr. Wilson	... ...	5,000	„
Total	...	...	105,448
Deduct—			
Lost and smashed in floating	...	5,273	
In the river and taken over by the Forest Department	... ...	11,022	
Logs sold as logs	... ...	509 =	16,804
Balance	... ...	...	88,644 logs.

which were converted into sleepers, and yielded 606,200, of the following dimensions, which were delivered to the Rajpootana Railway Officers at Agra and Delhi :—

11′ × 8″ × 4″	sleepers	42,093
10′ × 10″ × 5″	„	40,840
6′ × 8″ × 4″	„	448,105
4′ × 8″ × 4″	„	26,689
3½′ × 8″ × 4″	„	48,473

Of these, 573,771 were accepted by the Railway Department, and 32,429 rejected, but of the rejections, 14,038 were half sleepers (4′ × 8″ × 4″ and 3½′ × 8″ × 4″), which of course are much more liable to split than full-sized sleepers.

The following simple account will show the actual financial results of this sleeper work, from its commencement up to the 31st March, 1874 :—

To paid contractor for delivering to the Rajpootana State Railway 573,771 sleepers	... ...	Rs. 13,44,632
To charges on 509 deodar logs	... ...	„ 2,984
Total charges	...	Rs. 347,616

By price paid by the Railway Department, for 573,771 deodar sleepers	Rs.	15,74,857
By amount realized on sale of 509 logs	„	6,803
Total amount realized ...	Rs.	15,81,660

Which leaves a balance in favour of the Forest Department of Rs. 2,34,044.

Added to this is the sale of the refuse from sawing, which may be put down as Rs. 30,000, and 20 per cent. on sale of the rejected sleepers, which will probably be Rs. 3,000.

N. B.—The expenditure on, and sales of, the refuse deodar is so mixed up with the drift and waifwood accounts, that it is impossible to give the exact amount, but Rs. 30,000 is not very far from the mark.

Against this profit must be borne in mind the annual payment of Rs. 10,000 to the Rajah of Tehree for the lease of his forests. The whole amount is paid through the Bhagaruttee Division; but according to the partitioning off of the forests, a fair distribution, when calculatiag results by forest divisions, would be—

Bhagaruttee Division	Rs.	6,000
Jounsar „	„	3,800
Dehra Doon „	„	200
Total ...	Rs.	10,000

71. *Goruckpore Division.*—As mentioned in paragraph 63, these forests have been commenced to be worked on a regular "working plan."

Two blocks were selected in Nugwa, and the standing timber offered for sale on a standing scale of charge per tree, estimated on measurement of diameter at breast high.

The system found favour with the native merchants, and nearly all the serviceable timber, consisting of 3,039 trees, was thus disposed of, at a general average of a little over Rs. 6 per tree. The conditions of contract prescribed that the timber remained the property of Government until paid for, and also gave the right of confiscation of all timber not paid for on the 31st March, 1874.

The contractors, however, were under the impression that the right would not be enforced vigorously, and consequently delayed payment past the stipulated date; but the timber is under departmental control at the ghât and therefore there is no cause for anxiety on this account.

Mr. Amery discovered that there was no demand for timber at the depôt which was established by his predecessor at the little village of Manghi on the Ganges, so he had the greater portion of it sent on to Dinapore. He had ordered it all to be sent on at the commencement of the winter, but the depôt mohurrir disregarded the instructions, and consequently stock, valuing nearly Rs. 6,000, remained at Manghi on the 1st April, 1874, and its sale proceeds must therefore stand over until 1874-75.

The outturn of felling operations and of sales of other forest produce will be shown under "financial results."

The timber from these forests is disposed of in various ways; sometimes the trees are sold as they stand; a little is generally required in the station of Goruckpore, and a small quantity is disposed of to the inhabitants of the neighbouring villages; but the only markets that can really be depended on as requiring a steady annual supply are Dinapore and Patna. Hitherto the timber has been flaoted down to these places *in log*; but it has been decided that as soon as proper arrangements can be made, it will be more remunerative to convert the timber in the forests, and send it down in suitable sized scantlings.

The lines of export from the Goruckpore forests are the rivers Pias, Rohun and Raptee, which all run into the Ghogra, and so on to the Ganges.

II.—UNRESERVED OR DISTRICT FORESTS.

72. *The Rohilkhund Forest Division.*—This division includes the forests of both Bijnour and Bareilly districts. These are all unreserved district forests, under charge of the Collectors of Bijnour and Bareilly, except Chandni, which, as stated in paragraph 17, is leased to the Roorkee Woorkshops, to supply that establishment with fuel and second class timber, and is under control of the Conservator, *not the Collector.* But very few mature sâl trees now remain in Chandni, and these only in inaccessible places. In some parts there are good patches of promising sâl saplings; but, taken as a whole, we may consider this forest valueless timber, but very useful for supplying fuel and charcoal to the Roorkee Workshops.

Chandni has natural boundaries, and therefore requires no pillars. On the south and west the river Ganges; on the east the Peelee stream; and on the north the Ghasseeram water-course.

The Rehur forest is worked by the Collector of Bijnour; it is very useful for supplying sâl poles for native buildings, firewood, grass, &c., but contains no valuable timber, and never will.

The area of the forests in the Bijnour district is 86 square miles.

The protective establishments of these forests are as follows:—

Bijnour District.—One jemadar and four peons at a monthly cost of Rs. 30.

Bareilly District.—Two mohurrirs and three peons at a monthly cost of Rs. 26.

The establishment for the Chandni forest is not included in the above; it is entertained at the expense of the Roorkee Workshops.

The Collectors of Bijnour and Bareilly report that there have been no cases of breach of forest rules during the year.

In Bijnour the timber is cut and brought to depôt, and consists chiefly of young trees that have died or fallen. In Bareilly there is hardly any timber; the few trees that die or fall during the year, generally about a thousand rupees worth, are removed by purchasers at contract rates. In both districts the collection of minor forest produce is leased to contractors.

73. *The Jhansie Forest Division.*—In this division there are—

		Miles.	*Acres.*
In the Jhansie District	... ...	31	261
„ Lullutpore „	... ...	177	0
„ Jaloun „	... ...	3	18

The Jhansie forests are very poor scrubby jungles. The main portion of them are situated along the Betwa river, in the south-east corner of the district. These contain some small teak close to the river; there are also four patches on the eastern boundary marching with Humeerpore, and two patches in the Mhow pergunnah. These have no teak; they are mere scrubby jungles, useful only for firewood, grass, &c., and a few bamboos.

These forests are all demarcated with stone pillars.

The principal forests of the Lullutpore district are in the pergunnahs of Maraura and Balabehut. These extend along the whole southern boundary of the district, covering an area of about 110 square miles; the remainder, except one tract to the north of the Talbehut pergunnah, one small patch in Lullutpore, and two small patches in Mehrownie, lie almost in a line along the northern boundaries of Banpore and Bansi, and the southern boundary of Talbehut.

The forests of the Marawra pergunnah are by far the most valuable ; they cover an area of about 6·3 square miles, and contain teak, mowa (Bassia latifolia), ebony, khair (Acacia catechu), &c., and, what at present brings in the most income, good bamboos.

In most of the other forests there are small patches of poor teak and a good sprinkling of bamboos. Taken as a whole, the Lullutpore forests are considerably superior to those of the Jhansie District ; and now that they are under charge of an officer who takes such a keen interest in the work (Captain Liston, Assistant Commissioner), there seems a good chance of their yielding a satisfactory revenue, and also being much improved.

All the forests of this district are demarcated by stone masonry pillars.

At the settlement, Government behaved very liberally to the villagers of the Jhansie division as regards forests, leaving them large portions for their unrestricted use ; but these village forests are not sufficient to supply the whole of the wants of the population, and they purchase from Government forests what they cannot obtain from their own.

The protective establishments of these forests are as follows :—

Jhansie District.—One darogah and 12 chupprassies.

Lullutpore.—One darogah, three jemadars, and 19 chupprassies.

In the Jhansie district there have been three cases, involving eight persons, of breach of forest rules brought before a Magistrate, and convictions obtained in every case.

The Assistant Commissioner of Lullutpore reports that "the establishment has worked well for the protection of the forests, and a good many cases prosecuted, and the offenders punished."

It is not worth while going to much expense in improving these forests, for the demand from them is so very trifling in comparison to the area ; under the existing system they are protected from unlawful felling ; timber and bamboos are cut at the proper seasons, and in sufficient quantity for the demand ; and good arrangements are made for disposing of the minor produce ; and if a few favourable patches were selected and preserved from fire, as recommended by Colonel Pearson in paragraphs 17,18, and 30 of his No. 52 A., dated 11th April, 1870, to the address of the Secretary to Government, North-Western Provinces, Public Works Department, Forest Branch ; and a few small plantations of teak, bamboos, and perhaps in some places Acacia Arabica made within these preserved tracts, I don't think anything more need be done for them.

A little money will be asked for in the Budget for 1875-76 ; and if any can be spared from other divisions, a little will be given during the current year, 1874-75, for these purposes ; and during my proposed tour to these forests in January or February next, I will endeavour to select some favourable plots for the purpose, and will advise the District Officers how to treat them.

The demands from the forests in the Jhansie district are very small, owing, the Assistant Commissioner states, to the proximity of private forests, the chief of which are those belonging to the Orcha State, and are well stocked with teak, which finds a ready sale at remunerative rates. The system both in Jhansie and Lullutpore is to collect the timber and bamboos in depôts, and retail it as demanded. Auction sales were tried in Jhansie, but have proved a failure.

The minor produce is either sold on contract or by permits. The outturn of the timber work and of the sales of other forest produce will be shown under "financial results."

III.—VILLAGE AND PRIVATE FORESTS.

74. The forests under this head are mentioned here and there in the body of this report, and I don't think it is necessary to say more on the subject, for there is no intention, or, as yet, necessity, to exercise Government supervision over such forest lands.

I.—FINANCIAL RESULTS.

75. *Nynee Tal Sub-division.*—This sub-division shows—

Receipts	...	...	... Rs. 1,346 7 4
Expenditure	...	...	... „ 1,384 13 7

or a loss of Rs. 38-6-3; but the establishment bills for February, 1873, were paid during 1873-74, and as they amounted to Rs. 127-12-8, the revenue has actually exceeded the expenditure by Rs. 89-6-5.

The royalty rates on trees supplied is so low, Re. 1 to Re. 1-8 for a mature cheer tree, and eight annas for an oak or other fuel tree, that it is impossible to expect large receipts from these forests; and as these rates have been in force for so long, it would not perhaps be right to increase them; but Mr. Braidwood, who is now in charge of Conservator's office, takes an interest in this sub-division, and will, I feel sure, increase the revenue to some extent during the current year.

76. *Kumaon Division.*—The revised estimate for the year was as follows:—

Revenue	...	...	... Rs. 2,13,150
A.—Conservancy and working charges			... „ 78,700
The actuals of the year show that the revenue amounted to	...	...	... „ 3,64,340
And the A. expenditure to	...	...	... „ 54,396

	Rs. a. p.	Rs. a. p.
Under I.—Timber brought to depôt.		
Sâl logs	97,794 0 2	
„ scantlings	59,750 5 1	
Sein (Pentaptera tormentosa) scantlings ...	418 15 2	
Huldoo (Nauclia cordifolia) and Dhoura (Lagastromia Parriflora)	660 11 6	
Toon (Cedrela toona) planks	820 0 6	
		1,59,444 0 5
II.—Timber, &c., removed by purchasers.		
Fallen sâl timber	1,22,428 1 11	
Ditto poles	3,331 6 5	
Fuel	388 5 3	
		1,26,147 13 7
V.—Grazing dues.		
Grazing dues	...	7,139 3 8
VI.—Minor Forest Produce.		
Bamboos	14,733 11 1	
Bhabur grass	3,079 11 9	
Limestone and lime	9,427 2 5	
Skins	6,650 2 6	
Catechu manufactories	23,542 3 9	
Other minor produce	10,923 0 2	
		68,355 15 8
VII.—Confiscated, drift, and waif timber.	...	601 13 5
VIII.—Fines and forfeitures.	....	1,628 1 8
XI.—Miscellaneous receipts.	...	1,023 1 0

Included in the foregoing is the revenue of the Raneekhhet sub-division, Rs. 3,292, which, as compared with the actuals of 1872-73, shows an increase of Rs. 1,148.

The increase of revenue, in the Kumaon division is chiefly under heads I., II., and VI.

I.—Great efforts were made to dispose of the timber in depôt, and more especially the logs, as they had been a long time in stock, and were showing signs of decay; Captain Campbell has been most successful; he has sold a very large quantity of logs, and a good deal of sawn timber also.

II.—The enormous increase under this head is entirely due to Captain Campbell's excellent arrangements in having introduced a new system of charging duty on the fallen timber exported under the kham tuhseel. He has lessened the duty on small timber and increased it on large timber, making the general average a little higher than it was before; but so carefully have the rates been arranged, that an immense quantity of small and inferior timber has been taken out of the forests which the merchants would not have touched under the old system of charging an *uniform* amount per cubic foot *on all sizes.*

VI.—1872-73 was a favourable year for the revenue; under this heading, and the actuals of 1873-74 show only Rs. 2,000 less than the actuals of the previous year, and an increase of Rs. 18,000 over what was expected in the regular estimate.

This increase is very closely connected with II. In all probability there would have been more under VI., had not so many carts been employed in removing timber under II.

Although the revenue is so much in excess of the regular estimate, the expenditure is considerably below it; there is a saving under A.I. of about Rs. 13,500, owing to less timber having been prepared than was expected, and to economy in working expenses; the actuals of all the other headings are slightly below the estimate, but not to such an extent as to require explanation.

The working expenses of the Raneekhet sub-division amount to ... ... Rs. 2,664
And of the Raneekhet nurseries and plantations to, „ 1,125
Both these sums are included in the Kumaon division expenditure.

The outstandings of the year amount to Rs. 18,055, due on timber sold towards the end of the year, and are all recoverable.

77. *Gurhwal Division.*—The regular estimate for 1873-74 was as follows:—

Receipts ... ... Rs. 1,41,430
A.—Conservancy and working charges ... „ 65,950

The actuals of the year show—

Receipts ... ... Rs. 1,53,795
A.—Expenditure ... ... „ 57,787

The following is a detail of the receipts:—

I.—Timber brought to depôt.	Rs. a. p.	Rs. a. p.
Sâl logs..	10,882 0 0	
„ scantlings	41,660 0 0	
Sein (Pentaptera tormentosa) scantlings ...	378 0 0	
Other timber	11,913 0 0	
		64,833 0 0
II.—Timber removed by purchasers.		
Total amount ...	...	13,977 0 0

The annual statements of the division not having yet been submitted by Mr. Colvin, no details can be given	...		
V.—Grazing dues.			
Total amount ...	...		1,914 0 0
VI.—Minor produce.			
Bamboos	63,949 0 0		
Babhur grass	2,223 0 0		
Skins	3,655 0 0		
Other forest produce	2,562 0 0		72,389 0 0
VII.—Confiscated timber.	...		282 0 0
VIII.—Fines and forfeitures.	..		106 0 0
IX.—Miscellaneous receipts.	...		293 0 0
The expenditure was as follows:—			
A. I.—Timber expenses	38,000 0 0		
„ II.—Purchase of stock	117 0 0		
„ III.—Feed and keep of elephants ...	1,557 0 0		
„ V.—Charges on collecting revenue on minor forest produce ...	10,357 0 0		
„ VI.—Plantations	284 0 0		
„ VII.—Forest work	1,000 0 0		
„ VIII.—Forest survey	79 0 0		
„ X.—Communications	6,393 0 0		

The outstandings due to the division at close of the year are Rs. 2, 541, which includes a sum of Rs. 1,787, that may be considered as a doubtful debt.

The liabilities of the division at close of the year amounted to Rs. 6,519-4-6.

78. *Dehra Doon Division.*—According to the revised estimate for 1873-74—

The revenue was estimated at ...	Rs.	78,800
And A. conservancy and working charges...	„	29,000
The actuals of the year show that the revenue amounts to	„	78,270
And the A. expenditure to	„	28,326

As considerable details were given in paragraph 68, and both revenue and expenditure are so very close upon the revised estimate, it will be unnecessary to go into further particulars here.

The outstandings at close of the year amounted to Rs. 10,960, due for timber sold in February and March ; the whole amount is recoverable.

79. *Jounsar Division.*—In the revised estimate for 1873-74—

The revenue was estimated at ...	Rs.	4,89,490
And the A. conservancy and working charges	„	2,56,050
The actuals of the year show that the revenue amounts to	„	5,12,336
And the A. expenditure to	„	2,47,668

The increase in revenue is due almost entirely to "heading I., sale of timber brought to depôt by Government agency." The demand for timber at Chukrata was a little beyond the estimate; more sleepers were delivered to State Railways than expected, and more cheer (Pinus longifolia) was disposed of than was thought probable, judging from previous results.

The difference in expenditure is so trifling that it need not be noticed.

The balance of outstandings at close of the year was Rs. 1,438.

80. *Bhagaruttee Division.*—The regular estimate figures were as follows:—

Regular estimate, 1873-74, receipts	...	Rs. 5,26,200
„ „ A. conservancy and working expenditure	„	4,13,300
The actuals of the year show that the revenue amounted to	„	4,66,591
And the A. expenditure to	„	4,10,643

The decrease of revenue is entirely under A. I. The Ganges Canal was undergoing repairs, and consequently the sleepers were delayed, and not so many delivered before the 31st March as was expected.

Expenditure was well within the limit, and calls for no remark.

The outstandings at close of the year amounted to Rs. 1,939, all recoverable.

81. *Goruckpore Division.*—The regular estimate figures were as follows:—

Regular estimate, 1873-74, receipts	...	Rs. 24,400
„ „ A. conservancy and working expenditure	„	14,600
The actuals of the year show that the revenue amounted to	„	24,796
And the A. expenditure to	„	15,341

The result of year's transactions is satisfactory, both receipts and expenditure are slightly above the estimate. There is a balance of outstanding, on account of the year of Rs. 23,458 due to the department, and a charge of Rs. 1,838 for putwarees' fees, due from previous years, that was not estimated for in the Budget.

82. *Rohilkhund Division.*—The regular estimate figures were as follows:—

Regular estimate, 1873-74, receipts... ...	...	Rs. 18,400
„ „ A conservancy and working expenditure,	„	5,180

The actuals of the year amount to:—

Receipts	...	Rs.	22,421
A expenditure	...	„	5,184
Bijnour receipts amount to ...	..	Rs.	14,140
Bareilly ditto ditto ...	...	„	8,281
			22,421

as shown by the following detail:—

Bijnour receipts.

Sale of timber from depôt ...	...	Rs. 3,157
„ „ removed by purchasers ...	„	703
Lease of Chandni forest ...	...	„ 5,000
Grazing dues	„	70
Minor produce	„	4,837
Waif timber	„	362
Miscellaneous receipts	„	11

Bareilly receipts.

Sale of timber removed by purchasers ...	Rs.	1,072
Grazing dues	„	6,678
Minor produce	„	486
Confiscated timber and miscellaneous receipts	„	45
Bijnour expenditure A.	Rs.	1,980
Bareilly expenditure A.	„	3,204
		5,184

The increase of receipts over the regular estimate is due entirely to Bijnour sub-heads I., II. and VII.

83. *Jhansie Division.*—The regular estimate figures were as follows :—

Regular estimate, 1873-74, receipts ... ... Rs. 5,415
„ „ A conservancy and working expenditure, „ 1,880

The actuals of the year are—

Revenue .... Rs. 5,592
A.—Expenditure... ... ... „ 1,871

of which the following is the detail :—

Sale of timber from depôt ...	... Rs.	211
„ „ removed by purchasers ...	„	1,401
Grazing dues	... „	3,058
Minor produce	... „	415
Fines and miscellaneous receipts	... „	221
Permit fees	.. „	285

There has been considerable improvement in the management of the Lullutpore forests since Captain Liston, Assistant Commissioner, took charge of them, which fully account for the satisfactory results of the year.

84. Paragraphs 76 to 83 show financial results of the actual working of each division, *i. e.*, the total revenue realized and the total expenditure under *A. conservancy* and *working* ; the following summary will show the actual results of the North-Western Provinces' Forest Department for the year 1873-74, and a detail of these results according to forest divisions, including every expenditure *both under A. and B.*

85. *General Summary.*—The actual results of the year as regards receipts and expenditure, compared with the regular estimate, are as follows :—

	1873-74. *Regular estimate.*	1873-74. *Actuals.*
Receipts	Rs. 14,97,355	Rs. 16,29,496
Expenditure	„ 10,22,654	„ 9,66,506

Thus the revenue realized during the past year exceeded the regular estimate by Rs. 1,32,141, and the expenditure was less than the estimate by Rs. 56,148.

The two following statements show the revenue realized and the amount expended in each division as compared with the regular estimate :—

Revenue.	Regular Estimate.	Actuals.	Increase.	Decrease.	
	Rs.	Rs.	Rs.	Rs.	
Direction Division ...	30	8	...	22	
Nynee Tal Sub-division, Kumaon Division ...	2,13,150	3,65,687	1,52,537	...	
Gurhwal „ ...	1,41,430	1,53,795	12,365	...	
Dehra Doon „ ...	78,800	78,270	...	530	
Jounsar „ ...	4,89,490	5,12,336	22,846	...	
Bhagaratee „ ...	5,26,200	4,66,591	...	59,609	
Goruckpore „ ...	24,400	24,796	396	...	
Rohilkhund „ ...	18,440	22,421	3,981	...	
Jhansie „ ...	5,415	5,592	177	...	
	14,97,355	16,29,496	1,92,302	60,161	Increase. 1,32,141

Expenditure.	Regular Estimate A. and B.	Actuals A. and B.	Increase.	Decrease.
	Rs.	Rs.	Rs.	Rs.
Direction Division ...	37,840	28,850	...	8,990
Nynee Tal Sub-division, Kumaon Division ...	1,03,404	80,387	...	23,017
Gurhwal „ ...	84,014	75,267	...	8,747
Dehra Doon „ ...	51,006	49,131	...	1,975
Jounsar „ ...	2,81,074	2,71,541	...	9,533
Bhagaratee „ ...	4,26,924	4,24,103	...	2,821
Goruckpore „ ...	26,852	26,303	...	549
Rohilkhund „ ...	7,201	7,043	...	158
Jhansie „ ...	4,239	3,881	...	358
	10,22,654	9,66,506	...	56,148

86. To make the financial results' portion of this report quite complete, statements in form 28, showing the net results of the working of each forest division, are here given, followed by a statement showing the receipts and expenditure of each division for 1873-74, as compared with the actuals of the previous year.

Annual Statement showing the net results of Forest Revenue for the year 1873-74.

Division. Garhwál.

Receipts.	Amount.	Disbursements.	Amount.
	Rs. a. p.		Rs. a. p.
Amount of revenue realized in 1873-74	1,53,794 9 8	Amount disbursed in 1873-74,	75,266 8 7
Deduct—		Deduct—	
Amount realized on account of previous periods ...	1,523 9 3	Amount disbursed on account of transactions of former periods	3,490 6 8
Balance ...	1,52,271 0 5	Balance ...	71,776 1 11
Add—		Add—	
Outstandings on account of the year ... Rs. 2,541 3 11		Amount due for transactions during the year under review, but not yet disbursed,	6,519 4 6
Minus for bad debts ... „ 1,787 0 10	754 3 1		
Value of the year's transactions,	1,53,025 3 6	Real cost of the year's transactions	78,295 6 5

	Rs. a. p.
Value of the year's transactions	1,53,025 3 6
Cost of the year's transactions	78,295 6 5
Balance	74,729 13 1
Add difference between the value of stock at the commencement and close of the year...	38,575 1 1
Net result of the year	1,13,304 14 2

Division. Kumaun.

Receipts.	Amount.	Disbursements.	Amount.
	Rs. a. p.		Rs. a. p.
Amount of revenue realized in 1873-74 ...	3,65,686 8 9	Amount disbursed in 1873-74,	80,387 3 10
Deduct—		Deduct—	
Amount realized on account of previous periods ...	14,392 2 0	Amount disbursed on account of transactions of former periods	...
Balance ...	3,51,294 6 9	Balance ...	80,387 3 10
Add—		Add—	
Outstandings on account of the year	18,054 15 8	Amount due for transactions during the year under review, but not yet disbursed ...	2,162 13 9
Minus for bad debts ...	...		
Value of the year's transactions,	3,69,349 6 5	Real cost of the year's transactions	82,550 1 7

	Rs. a. p.
Value of the year's transactions	3,69,349 4 5
Cost of the year's transactions	82,550 1 7
Balance	2,86,799 4 10
Deduct difference between the value of stock at the commencement and close of the year	20,202 14 5
Net results of the year	2,66,596 6 5

Division. Debra Dún.

Receipts.	Amount.	Disbursements.	Amount.
	Rs. a. p.		Rs. a. p.
Amount of revenue realized in 1873-74	78,270 0 9	Amount disbursed in 1873-74,	49,130 12 11
Deduct—		Deduct—	
Amount realized on account of previous periods ...	3,686 11 11	Amount disbursed on account of transactions of former periods	3,101 0 10
Balance ...	74,583 4 10	Balance ...	46,021 12 1
Add—		Add—	
Outstandings on account of the year	11,060 8 4	Amount due for transactions during the year under review, but not yet disbursed ...	4,200 0 0
Minus for bad debts ...	...		
Value of the year's transactions,	85,643 13 2	Real cost of the year's transactions	50,221 12 1

	Rs. a. p.
Value of the year's transactions	85,643 13 2
Cost of the year's transactions	50,221 12 1
Balance	35,422 1 1
Add difference between the value of stock at the commencement and close of the year	544 7 9
Net results of the year	35,966 8 10

Division. Jaunsar.

Receipts.	Amount.	Disbursements.	Amount.
	Rs. a. p.		Rs. a. p.
Amount of revenue realized in 1873-74	5,12,336 6 7	Amount disbursed in 1873-74,	2,71,541 4 1
Deduct—		Deduct—	
Amount realized on account of previous periods ...	1,145 2 7	Amount disbursed on account of transactions of former periods	...
Balance ...	5,11,191 4 0	Balance ...	2,71,541 4 1
Add—		Add—	
Outstandings on account of the year	45,981 2 7	Amount due for transactions during the year under review, ...	14,479 5 5
Minus for bad debts ...	...		
Value of the year's transactions,	5,57,172 6 7	Real cost of the year's transactions	2,86,020 9 6

	Rs. a. p.
Value of the year's transactions	5,57,172 6 7
Cost of the year's transactions	2,86,020 9 6
Balance	2,71,151 13 1
Add difference between the value of stock at the commencement and close of the year	1,15,292 12 2
Net results of the year	3,86,444 9 3

Annual Statement showing the net results of Forest Revenue for the year 1873-74.—(concluded).

Division.	Receipts.	Amount.	Disbursements.	Amount.
		Rs. a. p.		Rs. a. p.
Bejadbutt.	Amount of revenue realized in 1873-74	4,66,591 0 0	Amount disbursed in 1873-74,	4,24,103 0 0
	Deduct—		Deduct—	
	Amount realized on account of previous periods ...	4,36,945 0 0	Amount disbursed on account of transactions of former periods	3,86,263 0 0
	Balance ...	29,646 0 0	Balance ...	37,840 0 0
	Add—		Add—	
	Outstandings on account of the year	3,756 0 0	Amount due for transactions during the year under review, but not yet disbursed,	1,69,099 0 0
	Minus for bad debts ...	...	Real cost of the year's transactions	2,06,939 0 0
	Value of the year's transactions,	33,402 0 0		
				Rs. a. p.
	Value of the year's transactions			33,402 0 0
	Cost of the year's transactions			2,06,939 0 0
	Balance			1,73,537 0 0
	Deduct difference between the value of stock at the commencement and close of the year			1,05,524 0 0
	Net results of the year ... ... (Debit Balance.) ...			68,013 0 0
		Rs. a. p.		Rs. a. p.
Gorakhpur.	Amount of revenue realized in 1873-74	24,795 12 1	Amount disbursed in 1873-74,	26,303 6 3
	Deduct—		Deduct—	
	Amount realized on account of previous periods ...	1,092 4 5	Amount disbursed on account of transactions of former periods ...	2,699 11 9
	Balance ...	23,703 7 8	Balance ...	23,603 10 6
	Add—		Add—	
	Outstandings on account of the year ... Rs. 23,893 1 9		Amount due for transactions during the year under review, but not yet disbursed ...	...
	Minus for bad debts at 10 per cent. on 2,577 (pethes) 257 11 9	23,635 6 0	Real cost of the year's transactions	23,603 10 6
	Value of the year's transactions,	47,338 13 8		
				Rs. a. p.
	Value of the year's transactions			47,338 13 8
	Cost of the year's transactions			23,603 10 6
	Balance			23,735 3 2
	Deduct amount necessary to replace depôt sales from stock at Forest Ghât, 2,000			
	Deduct estimate for excess valuation of Asra logs at commencement of year, 1,100			
				3,110 0 0
	Net results of the year			20,625 3 2

Note.—The outstandings at 1st April, 1873, as per C. and D. Abstract, were Rs. 1,526-14-5, but realizations on account of previous years having exceeded that amount, enquiries were made, from which it appears that petty outstandings, aggregating Rs. 2,595-7-1, had been omitted from the abstract of C. and D. Ledger.

As a matter of account, these omissions are treated as settlements during the year, by which the net results of the year are shown as Rs. 2, 595-7-1 in excess of their real value.

Division.	Receipts.	Amount.	Disbursements.	Amount.
		Rs. a. p.		Rs. a. p.
Rohilkhand.	Amount of revenue realized in 1873-74	22,421 7 11	Amount disbursed in 1873-74,	7,042 11 7
	Deduct—		Deduct—	
	Amount realized on account of previous periods ...	...	Amount disbursed on account of transactions of former periods ...	...
	Balance ...	22,421 7 11	Balance ...	7,042 11 7
	Add—		Add—	
	Outstandings on account of the year	...	Amount due for transactions during the year under review, but not yet disbursed,	...
	Minus for bad debts ...	...	Real cost of the year's transactions	7,042 11 7
	Value of the year's transactions,	22,421 7 11		
				Rs. a. p.
	Value of the year's transactions			22,421 7 11
	Cost of the year's transactions			7,042 11 7
	Balance			15,378 12 4
	Deduct difference between assets and liabilities at the commencement and close of the year			430 0 9
	Net results of the year			14,948 11 7
		Rs. a. p.		Rs. a. p.
Jhansi.	Amount of revenue realized in 1873-74	5,591 9 10	Amount disbursed in 1873-74...	3,881 6 8
	Deduct—		Deduct—	
	Amount realized on account of previous periods ...	...	Amount disbursed on account of transactions of former periods	...
	Balance ...	5,591 9 10	Balance ...	3,881 6 8
	Add—		Add—	
	Outstandings on account of the year	...	Amount due for transactions during the year under review, but not yet disbursed,	...
	Minus for bad debts ...	...	Real cost of the year's transactions	3,881 6 8
	Value of the year's transactions,	5,591 9 10		
				Rs. a. p.
	Value of the year's transactions			5,591 9 10
	Cost of the year's transactions			3,881 6 8
	Balance			1,710 3 2
	Add difference between assets and liabilities at the commencement and close of the year			1,560 5 0
	Net results of the year			3,270 8 2

Statement showing actual Receipts and Expenditure for the year 1873-74, *as compared with the Actuals of* 1872-73.

Name of Division.	Receipts.		Expenditure A. and B.		Receipts.		Expenditure.		Remarks.
	1872-73.	1873-74.	1872-73.	1873-74.	Increase.	Decrease.	Increase.	Decrease.	
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
Direction Division ...	58	8	29,389	28,850	...	50	...	539	
Kumaon „ ...	2,67,339	3,65,687	91,361	80,387	98,348	...	...	10,974	Nynee Tal Sub-division included in these figures.
Gurhwal „ ...	2,08,701	1,53,795	61,564	75,267	...	54,906	13,703	...	
Dehra Doon „ ...	90,233	78,270	46,285	49,131	...	11,963	2,846	...	
Jounsar „ ...	3,23,834	5,12,336	3,37,766	2,71,541	1,88,502	...	...	66,225	
Bhagaruttee „ ...	6,94,014	4,66,591	4,25,429	4,24,103	...	2,27,423	...	1,326	
Goruckpore „ ...	29,041	24,796	15,882	26,303	...	4,245	10,421	...	
Rohilkhund „ ...	25,701	22,421	8,025	7,043	...	3,280	...	982	
Jhansie „ ...	3,935	5,592	3,311	3,881	1,657	...	570	...	
Grand Total, Rs. ...	16,42,856	16,29,496	10,19,012	9,66,506	2,88,507	3,01,867	27,540	80,046	

Compared with the actuals of 1872-73 this year shows capital results; the revenue is but Rs. 13,360 less, and the expenditure shows a decrease of Rs. 52,506.

The stock at close of 1872-73 was valued at Rs. 2,87,339, and at close of the year under report at Rs. 5,21,210, *vide* Form D. for 1873-74.

The outstandings due to the Department were at commencement of the year under report	Rs.	1,78,516
At close of the year	,,	1,05,287
The liabilities at commencement of the year amounted to ...	,,	4,352
And at close of the year to	,,	1,96,891

II. GENERAL REMARKS.

The financial results of the year are exceedingly satisfactory; every one of the divisions has been worked *remarkably* well except Gurhwal. Mr. Colvin, the Deputy Conservator in charge, was in bad health during the greater part of last working season, and had to take leave during February and March. The revenue of the division was certainly above the regular estimate, but still I do not think it is what it would have been under more favourable circumstances; and compared with the actuals of 1872-73, heads II. and VI. show a decided falling off, which is the more clearly shown to be unsatisfactory by a comparison of the revenue of the Kumaon division for 1873-74, with its actuals for 1872-73, and the well established fact that, although the revenue under these two headings is apt to fluctuate considerably, the forests of the two divisions are so closely allied that it has always been found that, if in any year there was an increase or a decrease of revenue in either one of the divisions, there was a corresponding proportionate increase or decrease in the other.

Allowing for the bad health of Mr. Colvin during the working season, the Gurhwal financial results may be considered *satisfactory*, though not remarkably so.

Kumaon shows the most satisfactory results of any of the forest divisions of the North-Western Provinces, and very great credit is due to Captain Campbell for having, by his excellent arrangements (*vide* paragraph 76), increased the revenue of his division so far beyond what it ever has been before.

The division which shows the next best results is Jounsar; the sleeper works have been continued in the most creditable manner, but the most satisfactory work is the increased sale of Pinus longifolia timber, as mentioned in paragraph 69. The amount realized from this source, Rs. 37,414, does not at first sight appear to call forth such laudatory remarks; but heretofore cheer timber was a perfect drug in the market, no native would buy it at any price, and great credit is due to Mr. Bagshawe for having so successfully insinuated it into the market. He commenced by selling it at a mere nominal price, but taking care that it was of good quality, and then gradually increased the rate as the demand arose until he got it up to 12 annas per cubic foot, which is a fairly remunerative rate. The permanent financial success of the Jounsar Division depends a good deal on the sale of cheer timber, for when the sleeper works are finished the revenue resources of the division will be few, and those few not very profitable. There is, compared with the demand, an inexhaustible supply both on the Tonse and Jumna, and as the forests are close down to the river's banks it is a comparatively cheap timber to export.

The Dehra Doon division has been worked very well by Mr. Brereton; the revenue is good as compared with the expenditure, and considering that no sâl timber has been felled. In former years this division hardly ever paid its expenses. In 1871-72 and 1872-73, the revenue was considerably raised (1871-72 Rs. 96,800, 1872-73 Rs. 90,200) by felling large quantities of sâl, and it is very satisfactory to find that it can now make a profit of about 60 per cent. and that without cutting a single green sâl tree.

Mr. Brereton is assisted by Mr. Sheikh Moheed-ood-deen, Assistant Conservator, 3rd Grade, and Mr. Down, Sub-Assistant Conservator; he speaks very highly in praise of Mr. Sheikh Mohee-ood-deen, and says that "the revenue has greatly increased under his supervision. " Of Mr. Down he writes, "Altogether he has relieved me of a good deal of the work connected with the Eastern Doon, which is heavier than usual this year."

The Bhagaruttee division has been excellently managed by Mr. O'Callaghan, as usual.

The Goruckpore Division is now in a fair way towards a proper development of its resources. Mr. Amery takes a very keen interest in his work and I have great confidence in him as a Forest Officer. A few months after he had taken charge, he had acquired such a thorough knowledge of his forests that he was able to draw up a complete working plan for his division, perfect in every detail and *quite practical.* We may be sure that the Goruckpore forests will now be worked carefully and systematically; and Mr. Amery has great hopes of their yielding a far better revenue than they have hitherto done.

The demand for timber in the North-Western Provinces has increased considerably during the last two years, and it is satisfactory to observe that the inferior kinds were in better demand during the past year.

The annual report for 1874-75 should give some interesting information regarding the success of the depôts at Moradabad, Meerut, Cawnpore and Calpee, which have been established with a view of ascertaining the timber requirements of the Provinces, and also of opening a market for the disposal of the enormous amount of second class timber that our Kumaon and Gurhwal forests are so rich in, and thereby saving the drain upon sâl until we can get a valuation of the sâl forests and decide on the amount of timber they are capable of yielding annually.

The revenue from minor forest products does not fluctuate so much now as it used to a few years ago, which in all probability is due to better arrangements having gradually been made for the convenience of exporters, and the forest roads being kept open and in good repair. The fluctuation is always due *to the demand* and not *to the supply*, for the supply is quite equal to the demand, except perhaps of Khair (acacia catechu) timber; but that is not of very great importance, for although khair is preferred for certain purposes, such as sugar and rice pestles, still there are other woods which can take its place.

The Jounsar work was sub-divided as follows:—

Deobun sub-division was held by Mr. Whittall throughout the working season.

The Tonse sleeper works were under charge of Mr. O. Greig throughout the year. The Doon works were held by Mr. Palmer, and the special works around Deobun by Mr. Braidwood from April to October, when he was sent to take charge of the Conservator's office.

Mr. Bagshawe, the officer in charge of the division, speaks very highly of the services of all these officers except Mr. Palmer, who he says did not exercise the requisite amount of care in taking over timber from the sawyers, the result being that Mr. Bagshawe had to look over the timber himself and to condemn, as not fit for despatch, a good deal that had been *passed* by Mr. Palmer. Mr. Bagshawe also says:—

" At the same time, I should note that it is a most difficult thing to pass timber sawn from damaged deodar logs and cheer logs just beginning to rot. I trust

now, Mr. Palmer is to take charge of a different class of works, that he will be more successful."

Mr. Bagshawe also writes at length on the good services of Mr. Whittall and Mr. O. Greig not having been requited.

Mr. Whittall was transferred to Bengal in June, 1873, by the Government of India, and promoted from 3rd to 2nd Grade Assistant Conservator; the North-Western Provinces' Government represented that it would be for the good of the service if this transfer did not take place; it was accordingly cancelled, and the promotion was cancelled also. It should be borne in mind that Mr. Whittall was quite willing to go to Bengal, but that the North-Western Provinces' Government, on the representation of the Conservator, objected to his going; but I certainly did not suppose that it would have the effect of cancelling his promotion, or I never should have proposed that he should remain.

Mr. O. Greig's case is perhaps harder still, for he had such a very good claim to promotion along with the other two officers who conducted the Tonse sleeper works so successfully. Mr. Bagshawe and Mr. Braidwood have each been promoted a grade, but Mr. O. Greig still remains a Sub-Assistant Conservator.

The accounts of the department are audited by the Conservator. On receipt of the divisional monthly accounts the officer in charge of Conservator's office compares all vouchers with the cash book, notes any irregularities of the vouchers, such as insufficient details, expenditure without proper sanction, excess expenditure over sanctioned amounts, &c., checks all the figures, and then prepares a summary of revenue and expenditure of all the divisions for the month, for submission to the Accountant-General of the Province. The original divisional accounts and vouchers are then sent to the Conservator, who goes over every item, initials each voucher that is found to be correct, makes notes of all irrigularities, signs his name to the cash accounts sheets, and then returns the papers to his office.

Mr. Braidwood, Assistant Conservator 2nd Grade, took charge of the Conservator's office in November last, and has, I am happy to say, brought the office into most excellent working order; but he complains sadly of the great expense of living at Nynee Tal, and I think that some allowance, say Rs. 100 a month, might be made to him until a vacancy occurs for promoting him to 1st Grade Assistant. Rs. 350 a month is a small sum for a gentleman to live upon at Nynee Tal, where a decent house cannot be obtained much under Rs. 1,000 a year, and all the necessaries of life are equally dear in proportion.

As noted in various places in this report, Mr. Colvin has not yet, 29th July, submitted his annual report, which was due on the 25th June. This has put me to great inconvenience and delayed me considerably, for I have had to hunt up the figures from the monthly accounts, instead of getting them from the annual statements which accompany annual reports.

This is not the first time that Mr. Colvin's name has had to be brought before Government for irregularity in official correspondence, and not the first time by a good many that he has been censured by the Conservator for the same cause. Mr. Colvin is the senior Deputy Conservator of the Indian Forest Department, and therefore his conduct is all the more reprovable.

In conclusion, I beg to point out that this is the first annual report of the North-Western Provinces' Forest Department that has been written in the form ordered in Government of India Circular No. 18, dated 4th November, 1868, and that there are such a variety of subjects to be treated that it is not an easy task to give a perfectly descriptive account of each, and still keep the report within reasonable limits.

I have endeavoured to follow the form precisely, and to make the report a clear statement of facts in as few words as possible. It has covered a great many pages of paper, but still I fear that in some cases the descriptions have been cut too short. Any part of the report that the Inspector-General of Forests considers insufficient can be either reported on specially, or enlarged upon in the annual report for 1874-75.

I have the honor to be,

SIR,

Your most obedient Servant,

G. GREIG,

Offg. Conservator of Forests, N.-W. P.

NAINI TAL:
The 8th August, 1874.

No. 15.

FOREST DEPARTMENT, N.-W. P.

Statement of Timber on hand on the 31st March, 1874.

Name of Depôt.	Description of Timber.	Quantity. Number of pieces.	Quantity. Cubic feet.	Estimated selling rate per 100 cubic feet.	Estimated value.	Total per Depôt.
				Rs. a. p.	Rs. a. p.	Rs. a. p.
Kumaon Division. Ramnagar	Sâl logs	973	45,713 2 9	125 0 0	57,141 8 7	
	„ koloos	22	1,046 8 1	150 0 0	1,570 0 2	
	I. class sâl sleepers	300	1,881 8 0	112 8 0	2,116 14 0	
	II. „ „ „	1	1 4 0	75 0 0	1 0 0	
	III. „ „ „	249	332 0 0	37 8 0	124 8 0	
	I. „ „ kurries	25,057	46,893 2 4	118 12 0	55,685 10 8	
	II. „ „ „	6,920	16,277 3 2	93 12 0	15,259 15 0	
	III. „ „ „	2,293	3,652 9 0	50 0 0	1,826 6 0	
	I. „ huldoo „	2,009	3,275 3 4	62 8 0	2,047 0 9	
	II. „ „ „	147	229 2 0	50 0 0	114 9 4	
	III. „ „ „	34	54 5 4	50 0 0	27 3 6	
	I. „ sein „	307	507 9 4	62 8 0	317 5 9	
	II. „ „ „	142	235 10 0	46 14 0	110 8 8	
	III. „ „ „	50	105 2 6	31 4 0	32 14 0	
	I. „ toon planks	34	173 5 2	150 0 0	260 2 4	
	I. „ dhowri kurries	689	1,075 6 8	62 8 0	672 3 6	
	II. „ „ „	255	400 3 4	50 0 0	200 6 8	
	III. „ „ „	32	49 8 8	31 4 0	15 8 7	
	I. „ huldoo botahs	584	3,994 6 0	62 8 0	2,496 9 0	
	II. „ „ „	92	677 0 0	50 0 0	338 8 0	
	III. „ „ „	1	5 0 0	31 4 0	1 9 0	
	I. „ jamun kurries	51	76 8 0	62 8 0	47 14 8	
	II. „ „ „	30	45 10 0	50 0 0	22 14 8	
	III. „ „ „	4	6 4 8	31 4 0	2 0 0	
	Total Kumaon Division ...	...	...	...	...	1,40,433 4 10

Garhwal Division.	Sunnaie ...	Sâl logs			76	3,349	11	2	75	0	0		2,512	7	2	
		Rejected sleepers ...	6′ × 8″ × 4″		540	720	0	0	50	0	0		360	0	0	
		I. class sâl kurries ...	15′ × 6″ × 5″		2,220	6,937	6	0	125	0	0		8,671	14	0	
		„ „ „ ...	12′ × 5″ × 4″		16,077	26,795	0	0	112	8	0		30,144	6	0	
		„ „ „ ...	10′ × 5″ × 4″		2,879	3,998	7	4	112	8	0		4,498	7	0	
		II. „ „ „ ...	8′ × 4″ × 4″		3,354	2,981	4	0	100	0	0		2,981	5	4	
		„ „ „ ...	15′ × 6″ × 5″		140	437	6	0	100	0	0		437	8	0	
		„ „ „ ...	12′ × 5″ × 4″		1,241	2,068	4	0	87	8	0		1,809	12	8	
		„ „ „ ...	10′ × 5″ × 4″		865	1,201	4	8	87	8	0		1,051	3	5	
		„ „ „ ...	8′ × 4″ × 4″		492	437	4	0	75	0	0		328	0	0	
		„ „ „ ...	6′ × 4″ × 4″		117	78	0	0	56	4	0		43	14	0	
		Sâl butts			334	...			20	0	0	per score.	334	0	0	
		Kokat bullas			15	...			10	0	0	„	7	8	0	
		Sâl planks			1	...			0	8	0	each.	0	8	0	
		Sein logs			3	45	7	11	75	0	0	per 100 c. ft.	34	3	11	
		Sâl sleepers I. class ...	9½′ × 8″ × 5″		638	1,683	7	4	150	0	0		2,525	6	8	
		„ II. „ ...	9½′ × 8″ × 5″		51	134	7	0	100	0	0		134	9	4	
												Total ...	55,875	1	6	
	Seemulehour ...	Sâl logs			66	4,348	6	8	125	0	0		5,435	11	1	
		„ koloos			12	613	5	3	100	0	0		613	7	0	
		„ butts			112	...			20	0	0	per score.	112	0	0	
												Total ...	6,161	2	1	
	Gaurighât ...	Sein logs			111	3,811	1	6	75	0	0	per 100 c. ft.	2,858	5	6	
		Sâl bullas			99	...			60	0	0	per score.	297	0	0	
		Seeshum bullas			380	...			46	8	0	„	883	8	0	
		Sâl tors			4,000	...			9	0	0	„	1,800	0	0	
		Seeshum tors			6,000	...			6	4	0	„	1,875	0	0	
												Total ...	7,713	13	6	
	Laldhang ...	I. class sein and kokat kurries,	12′...5″...4″		2,810	4,683	4	0	50	0	0	per 100. c. ft.	2,341	10	8	
		II. „ „ „ ...	10′...5″...4″		1,318	1,830	6	8	50	0	0		915	4	5	
		„ „ „ ...	12′...5″...4″		202	336	8	0	37	8	0		126	4	0	
		„ „ „ ...	10′...5″...4″		226	313	10	8	37	8	0		117	11	4	
												Total ...	3,500	14	5	
	Asufgarh ...	I. class sâl kurries ...	12′...5″...4″		2,500	4,166	8	0	125	0	0		5,208	5	4	
		„ „ „ ...	10′...5″...4″		2,500	3,472	2	8	125	0	0		4,340	4	5	
		„ Sein „ ...	12′...5″...4″		4,509	7,515	0	0	62	8	0		4,696	14	0	
		„ „ „ ...	10′...5″...4″		3,491	4,848	7	4	62	8	0		3,030	6	1	
												Total ...	17,275	13	10	
	Total Garhwal Division ...				...	...			...			...	...			90,526 13 4

No. 15.

FOREST DEPARTMENT, N.-W. P.

Statement of Timber on hand on the 31st March, 1874.—(concluded.)

Name of Depôt.	Description of Timber.	Quantity. Number of pieces.	Quantity. Cubic feet.	Estimated selling rate per 100 cubic feet.	Estimated value.	Total per Depôt.
				Rs. a. p.	Rs. a. p.	Rs. a. p.
Dehra Dún Divn. — Doodia	Sâl kurries	3,301	5,723·65648	23 8 0 per score.	3,878 10 9	
	Sein „	251	376·80857	15 0 0 „	188 4 0	
	Damaged „	12	...	5 0 0 „	3 0 0	
				Total ...	4,069 14 9	
Dehra Dún Divn. — Lacheewalla	Sâl „	671	1,070·21547	24 8 0 „	821 15 7	
	Sein „	177	271·87605	17 0 0 „	150 7 2	
	Jamun „	21	33·05582	10 10 8 „	11 3 2	
	Various scantlings	15,429	7,937·86907	10 0 0 „	7,714 8 0	
				Total ...	8,698 1 11	
	Total Dehra Dún Division	...	...	...	...	12,768 0 8
Jaunsar Division. — Chukrata — In rivers and hill, and rafts,	Deodar kurries	7,530	8,010 10 5	150 0 0 per 100 c. ft.	12,016 4 10	
	„ planks	5,661	...	1 8 0 each.	8,491 8 0	
	„ condemned planks	92	...	0 12 0 „	69 0 0	
	Rai kurries	3,356	6,277 2 8	100 0 0 per 100 c. ft.	6,277 3 6	
	„ planks	7,590	...	1 0 0 each.	7,590 0 0	
	„ condemned planks	2,010	...	0 6 0 „	753 12 0	
	„ „ kurries	5	...	0 8 0 „	2 8 0	
	„ bullies	86	...	3 11 0 „	317 2 0	
	Sleepers 6′ × 8″ × 4″	74,992	...	1 7 0 „	1,07,863 5 0	
	„ 6′ × 8″ × 5″	10,560	...	1 10 0 „	17,160 0 0	
	„ 4′ × 10″ × 5″	3,568	...	1 2 7 „	4,156 0 0	
	Total Jaunsar Division	...	...	...	...	1,64,696 11 4
Bhagaruthi Division — Miapur	Deodar sleepers 12′ × 10″ × 6″	2,200	...	5 8 0 each.	12,100 0 0	
	„ „ 10′ × 10″ × 5″	2,700	...	4 3 0 „	11,306 4 0	
	„ „ 8¼′ × 8″ × 5″	12,000	...	3 2 0 „	37,500 0 0	
	„ „ 6′ × 8″ × 5″	19,900	...	2 4 0 „	44,775 0 0	
	Total Bhagaruthi Division	...	...		...	1,05,681 4 0

Gorakhpur Divn.	Maujhi	Asna logs	669	6,405 9 3	25 0 0 per 100 c. ft.	1,601 6 3			
		Sâl „	874	9,013 5 8	40 0 0 „	3,605 5 5			
		Kurma tops	1	...	1 0 0 each.	1 0 0			
		Bulla	2	...	2 0 0 „	4 0 0			
					Total ...	5,211 11 8			
	Birdghât ...	Koro	3,233	...	15 0 0 per 100	484 15 2			
					Total ...	484 15 2			
		Total Gorakhpur Division ...	...	...	...	...	5,696	10	10
	Jhánsi Division ...	Bamboos	48,829	...	0 7 6 per 100	228 13 9			
		Bullees	13,428	...	12 bullees for a rupee.	1,119 0 0			
		Kurias	17,875	...	300 „ „	59 9 4			
						1,407 7 1			
		Total Jhánsi Division ...	...	...	...	...	1,407	7	1
					GRAND TOTAL ...	... Rs.	5,21,210	4	1

CONSERVATOR'S OFFICE, N.-W. P.,
NAINI TAL:
The 8th August, 1874.

I testify that I have personally inspected the Depôt.

G. GREIG,

Offg. Conservator of Forests, N.-W. P.

No.

FOREST DEPART

Annual Summary of Revenue and Expen

Classification.	Direction.	Kumaon.	Garhwal.	Dehra Dún.
RECEIPTS.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a p.
I.—Sale of Timber at Depôts ...	...	1,59,444 0 5	64,832 15 9	17,529 7 9
II.—Sale of Timber removed by purchasers ...	...	1,27,479 4 11	13,976 9 1	42,648 6 0
III.—Duty on Foreign Timber ...	...	...	...	...
IV.—Permit fees ...	...	...	...	6,374 10 3
V.—Grazing dues ...	...	7,139 3 8	1,913 13 1	8,500 13 9
VI.—Sale of Fruits, &c.,	...	68,365 15 8	72,389 15 11	2,145 11 3
VII.—Sale of confiscated Timber ...	...	601 13 5	282 0 0	45 10 0
VIII.—Fines and Forfeitures ...	...	1,628 1 8	105 14 6	397 7 4
IX.—Miscellaneous ...	8 6 8	1,028 1 0	293 5 4	627 14 5
Total, Receipts ...	8 6 8	3,65,686 8 9	1,53,794 9 8	78,270 0 9
CONSERVANCY AND WORKING.				
I.—Timber expenses,	...	28,848 13 3	38,000 0 0	12,245 9 6
II.—Purchases of stock and cattle ...	...	170 8 2	117 8 6	344 1 0
III.—Feed and keep of cattle ...	...	3,131 3 11	1,556 9 11	4,344 5 5
IV.—Rent of leased forests ...	...	...	...	...
V.—Charges in collecting revenue on grass, &c. ...	...	10,890 2 10	10,356 9 7	1,442 14 2
VI.—Plantations ...	...	1,415 5 5	284 5 8	670 10 1
VII.—Forest Work ...	...	1,406 12 1	1,000 0 0	3,593 7 4
VIII.—Forest Survey ...	...	108 15 9	79 6 0	...
IX.—Experiments on Timber ...	...	...	...	...
X.—Communications and buildings ...	...	9,001 14 10	6,392 11 2	5,685 1 3
Total, Conservancy and Working ...	...	54,973 12 3	57,787 2 10	28,326 0 9
ESTABLISHMENTS.				
I.—Salaries ...	23,315 8 0	21,252 0 5	15,276 1 7	16,944 5 1
II.—Allowances ...	3,368 8 2	3,200 5 10	1,624 5 11	2,820 6 10
III.—Contingencies ...	2,166 7 3	961 1 4	578 14 3	1,040 0 3
Total, Establishment ...	28,850 7 5	25,413 7 7	17,479 5. 9	20,804 12 2
GRAND TOTAL, EXPENDITURE,	28,850 7 5	80,387 3 10	75,266 8 7	49,130 12 11

NOTE.—The original Statement has been examined by

NAINI TAL:

The 25th June, 1874.

21.

MENT, N.-W. P.

diture in the different Divisions during the year 1873-74.

Jaunsar.	Bhagaruthi.	Gorakhpur.	Jhánsi.	Rohilcund.	Total.
Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.
4,82,890 3 8	4,44,747 11 4	7,471 6 6	211 14 0	3,156 14 8	11,80,284 10 1
27,180 7 5	19,355 4 11	10,812 2 4	1,401 4 8	1,774 11 0	2,44,628 2 4
...	...	15 1 4	...	...	15 1 4
494 13 11	1,828 5 3	1,236 11 1	285 0 0	5,454 4 6	15,673 13 0
860 2 8	...	2,543 1 3	3,057 13 7	6,748 10 9	30,763 10 9
140 0 1	...	2,164 7 6	414 11 7	4,869 0 0	1,50,489 14 0
3 12 9	...	...	...	402 7 0	1,335 11 2
215 12 0	...	10 0 0	2 11 6	...	2,359 15 0
551 2 1	659 15 0	542 14 1	218 2 6	15 8 0	3,945 5 1
5,12,336 6 7	4,66,591 4 6	24,795 12 1	5,591 9 10	22,421 7 11	16,29,496 2 9
2,32,138 9 6	4,00,587 5 3	11,989 10 6	908 15 4	600 0 0	7,25,318 15 4
495 3 10	11 6 0	38 5 6	2 1 0	...	1,179 2 0
...	...	364 1 2	...	28 0 0	9,424 4 5
120 0 0	10,000 0 0	...	...	...	10,120 0 0
...	...	...	386 12 1	199 15 2	23,276 5 10
3,559 9 5	44 9 6	334 9 9	...	...	6,309 1 10
2,240 2 1	...	2,000 9 1	373 13 2	...	10,614 11 9
...	...	...	...	...	188 5 9
...	...	...	...	...	...
9,114 8 11	...	632 11 3	199 7 6	4,356 0 0	35,382 6 11
2,47,668 1 9	4,10,643 4 9	15,359 15 3	1,871 1 1	5,183 15 2	8,21,813 5 10
15,868 0 0	10,392 0 0	8,920 2 8	1,969 6 7	1,829 8 10	1,15,767 1 2
6,836 9 10	2,265 6 0	1,680 9 2	...	5 8 4	21,801 12 1
1,168 8 6	801 13 9	342 11 2	40 15 0	23 11 3	7,124 2 9
23,873 2 4	13,459 3 9	10,943 7 0	2,010 5 7	1,858 12 5	1,44,693 0 0
2,71,541 4 1	4,24,102 8 6	26,303 6 3	3,881 6 8	7,042 11 7	9,66,506 5 10

the Accountant-General, N.-W. P., and found correct.

G. GREIG,

Offg. Conservator of Forests, N.-W. P.

No. 22.

FOREST DEPARTMENT, N.-W. P.

Annual Abstract Account of the Cash Transactions of the Forest Department in the North-Western Provinces.

Dr. Cr.

Year.	Heads of Account.	Rs.	a.	p.	Year.	Heads of Account.	Rs.	a.	p.
	To Cash balances in hand on 1st April, 1873.					*By Expenditure of the Department during the year.*			
	1. Direction Office Division	693	12	7		1. Direction Division	28,850	7	5
	2. Kumaon "	16,287	3	10		2. Kumaon "	80,387	3	10
	3. Garhwal "	26,890	5	0		3. Garhwal "	75,266	8	7
	4. Dehra Dún "	2,929	4	11		4. Dehra Dún "	49,130	12	11
	5. Jaunsar "	588	8	3		5. Jaunsar "	2,71,541	4	1
	6. Bhagaruthi "	1,528	6	7		6. Bhagaruthi "	4,24,102	8	6
	7. Gorakhpur "	1,659	5	0		7. Gorakhpur "	26,303	6	3
		50,576	14	2		8. Jhánsi "	3,881	6	8
						9. Rohilcund "	7,042	11	7
							9,66,506	5	10
	To Revenue received during the year.					*By Remittance of Revenue to State Treasuries during the year.*			
		8	6	8			8	6	8
	1. Direction Office Division	3,65,686	8	9		1. Direction Division	3,36,084	10	2
	2. Kumaon "	1,53,794	9	8			+228	0	0
	3. Garhwal "	78,270	0	9		2. Kumaon "	+ 52	0	4
	4. Dehra Dún "	5,12,336	6	7			1,27,446	7	4
	5. Jaunsar "	4,66,591	4	6		3. Garhwal "	65,865	6	3
	6. Bhagaruthi "	24,795	12	1		4. Dehra Dún "	14,864	13	9
	7. Gorakhpur "	5,591	9	10		5. Jaunsar "	10,755	4	3
	8. Jhánsi "	22,421	7	11		6. Bhagaruthi "	24,542	8	5
	9. Rohilcund "					7. Gorakhpur "	4,441	9	10
						8. Jhánsi "	23,421	7	11
						9. Rohilcund "	+280	0	4
		16,29,496	2	9			6,07,430	10	7
74.					74.				

1873-

To Remittances from State Treasuries during the year.

1.	Direction Office Division	...	...	28,223	15 1
2.	Kumaon	"	...	91,165	13 7
3.	Garhwal	"	...	+149	8 4
4.	Dehra Dún	"	...	74,344	0 0
5.	Jaunsar	"	...	49,200	0 0
6.	Bhagaruthi	"	...	+230	0 0
7.	Gorakhpur	"	...	2,72,000	0 0
8.	Jhánsi	"	...	4,22,929	2 3
9.	Rohilcund	"	...	27,145	6 6
				3,931	6 8
				7,042	11 7
				+379	8 4
				9,75,982	7 8

To Remittances from other Departments.

1.	Direction Office Division	...	...	11	8 0
2.	Kumaon	"	...	187	8 7
3.	Garhwal	"	...	−149	8 4
5.	Jaunsar	"	...	443	15 8
				8,975	3 1
				9,618	3 4
				−149	8 4

To Advances recovered during the year.

1.	Direction Office Division	...	...	222	3 4
5.	Jaunsar	"	...	23,237	4 9
7.	Gorakhpur	"	...	7,889	4 10
9.	Rohilcund	"	...	1,000	0 0
				32,348	12 11
		Carried over	...	26,98,252	8 10

1873-

By Transfer Adjustment with Public Works Department and other Departments during the year.

2.	Kumaon Division	...	...	45,889	2 5
3.	Garhwal	"	...	27,813	12 8
4.	Dehra Dún	"	...	12,350	10 5
5.	Jaunsar	"	...	4,97,471	8 10
6.	Bhagaruthi	"	...	4,55,835	3 0
8.	Jhánsi	"	...	1,150	0 0
				10,40,510	5 4

By Advances Recoverable during the year.

1.	Direction Office Division	...	...	222	3 4
2.	Kumaon	"	...	700	0 0
5.	Jaunsar	"	...	28,234	12 5
7.	Gorakhpur	"	...	9,725	1 6
				38,882	1 3

By Refund of Revenue during the year.

2.	Kumaon Division	...	...	129	6 11
5.	Jaunsar	"	...	4,245	13 9
8.	Jhánsi	"	...	50	0 0
				4,425	4 8

By Refund of Advances during the year.

2.	Kumaon Division	...	...	...	

By Office Rent "Provincial."

4.	Dehra Dún Division	...	...	320	0 0
7.	Gorakhpur	"	...	140	0 0
				460	0 0
		Carried over	...	26,58,494	12 0

No. 22.

FOREST DEPARTMENT, N.-W. P.

Dr. *Annual Abstract Account of the Cash Transactions of the Forest Department in the North-Western Provinces.*—(concluded.) Cr.

Year.	Heads of Account.	Rs. a. p.	Year.	Heads of Account.	Rs. a. p.
1873-74.	Brought forward ...	26,98,252 8 10	1873-74.	Brought forward ...	26,58,494 12 0
	To Fund Deductions during the year.			*By "Provincial Services."—Unforeseen and Miscellaneous charges.*	
	2. Kumaon Division, Military	108 0 0		5. Jaunsar Division, *vide* G. O. No. 81F., dated 2nd March, 1874	237 4 9
	„ „ Orphan	120 0 0		*By Fund Deductions remitted to Treasury during the year.*	
		228 0 0		2. Kumaon Division, Government of India, Military and Orphan	...
	To Office Rent, "Provincial."			*By Cash Balances in hand on 31st March, 1874.*	
	4. Dehra Dún Division	...		1. Direction Office Division	78 12 3
				2. Kumaon „	10,084 11 1
				3. Garhwal „	24,946 1 9
				4. Dehra Dún „	2,962 8 1
				5. Jaunsar „	541 13 1
				6. Bhagaruthi „	355 13 7
				7. Gorakhpur „	778 12 3
					39,748 8 1
	GRAND TOTAL, Rs. ...	26,98,480 8 10		GRAND TOTAL, Rs. ...	26,98,480 8 10

NOTE.—The original statement has been examined by the Accountant-General, North-Western Provinces, and found correct.

NAINI TAL:
The 30th July, 1874.

G. GREIG,
Offg. Conservator of Forests, N.-W. P.

No. 23.

FOREST DEPARTMENT, N.-W. P.

Annual Statement of Outstandings and Liabilities of the Department on account of Contractors and Disbursers for the year 1873-74.

Divisions.	Department Debtor.			Department Creditor.			Balance Due.	
	At commencement of year.	Recoveries in cash and value of supplies and work done during year.	At close of year.	At commencement of year.	Payments made during year.	At close of year.	To Department (Outstandings.)	By Department. (Liabilities).
	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.
Kumaon	...	1,52,481 2 6	1,52,481 2 6	14,392 2 0	1,53,981 2 5	1,68,373 4 5	18,054 15 8	2,162 13 9
Garhwal	3,490 6 8	49,886 2 10	53,376 9 6	5,035 10 1	44,362 14 10	49,398 8 11	2,541 3 11	6,519 4 6
Dehra Dún	...	23,641 12 10	23,641 12 10	7,397 13 2	23,104 8 0	30,502 5 2	11,060 8 4	4,200 0 0
Jaunsar	...	2,31,258 3 11	2,31,258 3 11	26,609 4 3	2,36,150 12 10	2,62,760 1 1	45,981 2 7	14,479 5 5
Bhagaruthi	...	6,76,659 14 9	6,76,659 14 9	1,23,553 13 8	3,87,763 0 0	5,11,316 13 8	3,756 0 11	1,69,099 2 0
Gorakhpur	861 11 9	34,584 4 3	35,446 0 0	1,526 14 5	57,812 3 4	59,339 1 9	23,893 1 9	...
Jhánsi	...	828 12 0	828 12 0	...	828 12 0	828 12 0	...	...
Rohilcund	...	3,671 2 8	3,671 2 8	...	3,241 1 11	3,241 1 11	...	430 0 9
Total ...	4,352 2 5	11,73,011 7 9	11,77,363 10 2	1,78,515 9 7	9,07,244 7 4	10,85,760 0 11	1,05,287 1 2	1,96,890 10 5

CONSERVATOR'S OFFICE, N.-W. P.:
The 8th August, 1874.

G. GREIG,
Offg. Conservator of Forests, N.-W. P.

No. 24.

FOREST DEPARTMENT, N.-W. P.

Statement of Timber brought to Depôts from the different Forest Divisions for the year ending 31st March, 1874.

Name of River or Division.	Forest.	Description of Timber.	Pieces, Number.	Estimated cubic feet.	Total of each River or Division. Pieces.	Total of each River or Division. Cubic Feet.	Remarks.
				′ ″ ‴			
Kumaon Division ...		...	15	1,776 8 6			
		Sâl logs ...	18	716 5 4			
		„ koloos ...	1,297	3,321 4 0			
		„ sleepers ...	68,128	110,724 6 8			
		„ kurries ...	48	320 0 0			
		„ beams ...	234	585 0 0			
		„ planks ...	154	530 5 4			
		„ posts ...	596	1,102 4 4			
		Sein kurries ...	3,267	8,902 0 8			
		Huldoo, various ...	1,276	1,997 9 4			
		Dhowree kurries ...	85	128 10 8			
		Jaman „ ...	34	173 5 2			
		Toon planks ...	689	1,818 2 4	75,152	130,279 0 0	
Garhwal Division ...		Sâl sleepers ...	35,648	57,792 11 4			
		„ kurries ...	8,686	...			
		„ miscellaneous ...	4,235	...			
		Kokat bullees, &c. ...	15,380	...			
		Seeshum „ ...	12,687	23,689 8 10			
		Sein logs and kurries ...			77,325	83,300 10 6	

Dehra Dún Division ...	Sâl kurries ...	720	...				
	Sein „ ...	8,056	...				
	Jaman „ ...	14	...				
	Other scantlings ...	15,443	...		24,233	...	
Jaunsar Division ...	Deodar kurries ...	1,520	2,262	4 0			
	„ planks ...	150	...				
	Rai kurries ...	4	8	0 0			
	„ planks ...	217	...				
	„ bullies ...	377	...				
	Deodar and rai planks, condemned	2,654	...				
	„ „ kurries ...	667	...				
	„ „ sleepers ...	89,120	...		94,709	2,270	4 0
Bhagaruti Division ...	Deodar logs	594	17,500	0 0			
	„ sleepers ...	36,800	...		37,394	17,500	0 0
Gorakhpur Division ...	Asna logs	36	280	0 0			
	Sâl „	18	198	0 0			
	Bullahs and kooras, &c. ...	4,444	...		4,498	478	0 0
Jhánsi Division ...	Bullees and bullahs ...	14,230	...				
	Bamboos	72,608	...				
	Kurwas	35,843	...		122,681	...	
	Sâl bullees	11,610	...		11,610	...	
	Grand Total, pieces ...	...	...		447,602	...	

CONSERVATOR'S OFFICE, N.-W. P.:
Dated the 8th August, 1874.

G. GREIG,
Offg. Conservator of Forests, N.-W. P.

No.

FOREST DEPARTMENT, NORTH-

Annual Timber Ac

Headings and Divisions.	Particulars.										
	Sâl logs.	Sâl kurries.	All other kinds of sâl.	Deodar logs.	Deodar kurries and sleepers.	Deodar planks and rai kurries.	Rai bullies, huldoo planks and turrucks.	Chír sleepers.	Other kinds.	Pieces.	Totals.
I.—Stock in hand at the Depôts of the following Divisions at the commencement of the year:—											
Kumaon ...	2,460	5,048	379	...	...	...	3	...	225	8,115	
Garhwal ...	255	14,751	9,430	...	...	...	...	...	7,100	31,536	
Dehra Dún ...	...	6,543	...	...	...	...	...	...	2,877	9,420	
Bhagaruti ...	...	...	...	...	135	292	...	58	...	485	
Jaunsar ...	...	...	...	...	9,369	28,685	61	...	...	38,115	
Gorakhpur ...	1,656	...	...	...	...	...	...	...	1,180	2,836	
Jhánsi ...	...	...	...	...	...	...	...	...	1,529	1,529	
Rohilcund (Bijnaur) ...	...	...	1,573	...	...	...	...	...	...	1,573	93,609
II.—Timber received at Depôts from the Forests during the year:—											
Kumaon ...	15	68,128	1,751	...	...	...	3,267	...	1,991	75,152	
Garhwal ...	...	35,648	9,375	...	...	...	...	...	32,302	77,325	
Dehra Dún ...	...	720	...	...	...	...	...	...	23,513	24,233	
Bhagaruti ...	...	...	...	594	36,800	...	...	...	...	37,394	
Jaunsar ...	...	...	...	...	90,640	3,692	377	...	...	94,709	
Gorakhpur ...	18	...	...	...	...	...	...	...	4,480	4,498	
Jhánsi ...	..	...	...	...	...	...	...	...	122,681	122,681	
Rohilcund (Bijnaur) ...	...	...	11,610	...	...	...	...	...	...	11,610	447,602
									Grand Total, Pieces ...		541,211

Naini Tal:

The 8th August, 1874.

25.

WESTERN PROVINCES.

count for 1873-74.

PARTICULARS.

Headings and Divisions.	Sál logs.	Sál kurries.	All other kinds of sál.	Deodar logs.	Deodar kurries and sleepers.	Deodar planks and rai kurries.	Rai bullies, and huldoo logs, planks and turrucks, &c.	Chír sleepers.	Other kinds.	Pieces.	Totals.
I.—Timber removed by purchasers from Depôts during the year:—											
Kumaon ...	1,502	38,879	1,551	...	...	...	403	...	622	42,957	
Garhwal ...	113	18,014	12,717	...	...	...	...	...	20,337	51,181	
Dehra Dún ...	...	3,291	...	...	...	...	...	...	10,500	13,791	
Bhagaruti ...	...	...	...	594	135	292	...	58	...	1,079	
Jaunsar ...	...	...	...	...	2,531	9,121	352	...	...	12,004	
Gorakhpur ...	800	...	...	...	...	...	...	...	1,743	2,543	
Jhánsi ...	...	...	...	...	...	...	...	...	43,766	43,766	
Rohilcund (Bijnaur)	...	...	13,183	...	...	...	...	...	...	13,183	
											180,504
II.—Timber lost during the year:—											
Jaunsar ...	...	...	...	...	...	259	...	...	...	259	
Jhánsi Division (Lalitpur) ...	...	...	...	...	...	...	...	...	312	312	
											571
Otherwise removed during the year.											
Kumaon ...	...	27	7	...	...	...	...	...	...	34	
Jaunsar ...	...	...	...	...	828	4,283	...	...	...	5,111	
Gorakhpur ...	...	...	...	...	...	...	...	...	12	12	
Garhwal ...	...	...	301	...	...	...	...	...	...	301	
											5,458
III.—Stock in hand at the close of the year at the following Depôts:—											
Kumaon ...	973	34,270	572	...	...	...	2,867	...	1,594	40,276	
Garhwal ...	142	32,385	5,787	...	...	...	...	...	19,065	57,379	
Dehra Dún ...	...	3,972	...	...	...	...	...	...	15,890	19,862	
Bhagaruti ...	...	...	...	...	36,800	...	...	...	...	36,800	
Jaunsar ...	...	...	...	...	96,650	18,714	86	...	...	115,450	
Gorakhpur ...	874	...	...	...	...	...	...	...	3,905	4,779	
Jhánsi ...	...	...	...	...	...	...	...	...	80,132	80,132	
Rohilcund (Bijnaur)	...	...	...	...	...	...	...	...	...	...	
											354,678
									GRAND TOTAL, PIECES ...		541,211

G. GREIG,

Offg. Conservator of Forests, N.-W. P.

No. 26.

FOREST DEPARTMENT, N.-W. P.

Statement showing the amount realized on account of the different classes of Timber sold during 1873-74.

Divisions.	No. of logs sold.	Cubical contents.	Amount realized and due on account of Timber sold.	Average amount per log.	Average cubical contents of logs.	Average amount per 100 cubic feet.	Remarks.
		′ ″ ‴	Rs. a. p.	Rs. a. p.	′ ″ ‴	Rs. a. p.	
Kumaon	42,957	1,35,737 11 0	1,59,217 5 5	3 4 3	3 1 11	115 14 0	Pieces.
Garhwal	51,181	... †	59,568 14 8	1 2 7	...	...	Timber sold in previous years remaining unremoved at the commencement of the year ... 180,504
Dehra Dún	13,791	... †	13,741 4 0	0 15 11	...	...	Timber sold during the year ... 180,504
Jaunsar	12,004	... †	14,047 1 0	1 2 8	...	...	Total ... 180,504
Bhagaruti	1,079	18,080 0 0	7,801 13 4	7 1 9	16 9 0	43 2 5	Timber remaining unremoved at the close of the year ...
Gorakhpur	2,543	9,447 4 8	7,090 2 6	2 12 7	3 8 6	75 0 9	Balance removed from Depôts by purchasers during the year, 180,504
Jhánsi	43,766*	... †	211 14 0	0 0 0¾	...	...	
Rohilcund	13,183	... †	3,156 14 8	0 3 9	...	...	
	1,80,504	...	2,64,835 5 7	...	...	...	
	Deduct amount due but not realized during the year,		35,345 6 8				
	Balance ...		2,29,489 14 11				
	Add amount realized on account of former years ...		18,012 3 11				
	Add also amount realized for other kinds of timber,		9,32,782 7 3				
	Total shown as revenue on account of timber sales ...		11,80,284 10 1				

*The proceeds of 41,442 pieces credited under Head I., and of the balance, *viz.*, 2,324 pieces, under Head II.

† As but a minority of the total number of logs and pieces have been measured, the contents have been omitted, as incompatible with the requirements of columns 6 & 7.

NAINI TAL:
The 8th August, 1874.

G. GREIG,
Offg. Conservator of Forests, N.-W. P.

No. 27.

FOREST DEPARTMENT, N.-W. P.

Statement showing the amount expended on account of Timber received from the different Forest Divisions during 1873-74.

Name of Division.	Number of logs and pieces.	Cubical contents.	Timber expenses.	Conservancy expenses, cost of establishment, &c., of the Department, including Direction.	Total amount expended, including Direction.	Average amount paid per log.	Average cubical contents log.	Average amount paid per 100 cubic feet.	Remarks.
		′ ″ ‴	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	′ ″ ‴	Rs. a. p.	
Kumaon	75,152	130,279 0 0	28,848 13 3	52,685 13 8	81,534 10 11	1 1 4	1 8 9	92 9 4	
Garhwal	77,325	...	38,000 0 0	38,778 0 1	76,778 0 1	0 15 10	...	...	
Dehra Dún ...	24,233	...	12,245 9 6	37,372 4 2	49,617 13 8	1 8 8	...	...	
Jaunsar	94,709	...	2,32,138 9 6	48,636 1 2	2,80,774 10 8	2 7 2	...	...	
Bhagaruti ...	37,394	...	4,00,587 5 3	39,448 12 3	4,40,036 1 6	*...	...	...	* Average not given, since the expenditure includes sleepers' expenses due from 1872-73.
Gorakhpur ...	4,498	...	11,989 10 6	14,790 9 7	26,780 4 1	†5 15 3	...	...	† Includes expenditure on timber which will be brought to Depôt during 1874-75.
Jhánsi	122,681	...	908 15 4	3,008 9 9	3,917 9 1	0 0 6	...	...	
Rohilcund ...	11,610	...	600 0 0	6,466 9 5	7,066 9 5	0 9 8	...	...	

NAINI TAL :
The 8th August, 1874.

G. GREIG,
Officiating Conservator of Forests, N.-W. Provinces.

No. 28.

FOREST DEPARTMENT, N.-W. P.

Annual Account of Forest Revenue for 1873-74.

Receipts.				Disbursements.			
	Rs.	a.	p.		Rs.	a.	p.
Amount of revenue realized in 1873-74	16,29,496	2	9	Amount disbursed in 1873-74	9,66,506	5	10
Deduct—				*Deduct*—			
Amount realized on account of the previous periods ...	4,58,784	14	2	Amount disbursed on account of transactions of former periods	3,95,554	3	3
Balance ...	11,70,711	4	7	Balance ...	5,70,952	2	7
Add—				*Add*—			
Outstandings on account of the year ... 1,05,287 1 2	...			Amount due for transactions during the year under review, but not yet disbursed	1,96,890	10	5
Minus for bad debts 2,044 12 7	1,03,242	4	7				
Value of the year's transactions ...	12,73,953	9	2	Real cost of year's transactions ...	7,67,842	13	0

	Rs.	a.	p.
Value of the year's transactions	12,73,953	9	2
Cost of the year's transactions	7,67,842	13	0
Balance	5,06,110	12	2
Add difference between the value of stock at the commencement and close of the year	2,33,871	5	5
Net results of the year ... Rs.	7,39,982	1	7

Office of Conservator of Forests, N.-W. P.:
Naini Tal, the 8th August, 1874.

G. GREIG,
Offg. Conservator of Forests, N.-W. P.

FOREST DEPARTMENT, N.-W. P.

Statements showing area of Reserved and Unreserved Forests, Plantations, and Tracts protected from fire, and prosecution for breaches of Forest Rules.

Area of Reserved Forests.

Reserved Forests.		Area in 1872-73.	Added during the year.	Excluded or transferred to other heads.	Total remaining in 1873-74.
		Sqr. miles.	Sqr. miles.	Sqr. miles.	Sqr. miles.
Kumaon Division	...	...	700	...	700
Garhwal „	...	Statement not received.			
Dehra Dún „	...	485·144	...	...	485·144
Jaunsar „	...	Not demarcated.		...	24·55
Bhagaruti „	...	...	...	...	...
Gorakhpur „	...	...	...	...	...
Jhansi Division, Jhánsi Forests	...	...	...	...	...
Jhansi Division, Lalitpur „	...	...	...	...	...
Jhansi Division, Jalaun „	...	...	...	...	...
Rohilcund Do., Bareilly „	...	...	...	...	...
Rohilcund Do., Bijnaur „	...	...	...	...	...
Total	...	485·144	700	...	1,209·694

Area of Unreserved Forests.

Unreserved Forests.		Area in 1872-73.	Added during the year.	Excluded or transferred to other heads.	Total remaining in 1872-73.
		Sqr. miles.	Sqr. miles.	Sqr. miles.	Sqr. miles.
Kumaon Division	...	700	...	700	...
Garhwal „	...	1,000	No statement received this year.		1,000
Dehra Dún „	...	...	...	...	...
Jaunsar „	...	Not demarcated.			119·62
Bhagaruti „	...	Not known.	Forest leased from the Rajah.		Garhwal
Gorakhpur „	...	134	3·50	12·25	125·25
Jhansi Division, Jhánsi Forests	...	32	1	...	33
Jhansi Division, Lalitpur „	...	Not demarcated.	291·96	...	291·96
Jhansi Division, Jalaun „	...	...	...	...	...
Rohilcund Do., Bareilly „	...	137·314	...	...	137·314
Rohilcund Do., Bijnaur „	...	86·08	...	...	86·08
Total	...	2,089·394	296·46	712·25	1,793·224

Area of Plantations.

Plantations.	Area in 1872-73.	Total cost.	Area added during 1873-74.	Amount expended during 1873-74.	Total area up to 1873-74.	Total expenditure incurred up to 1873-74.
	A. r. p.	Rs. a. p.	A. r. p.	Rs. a. p.	A. r. p.	Rs. a. p.
Kumaon Division	155 2 0	5,374 7 10	33 2 9	1,002 1 3	189 0 9	6,376 9 1
Garhwal „	No statement received this year.					
Dehra Dún „	...	304 12 6	18 0 0	331 5 4	18 0 0	636 1 10
Jaunsar „	520 1 10	5,596 6 0	77 2 9	1,963 3 5	597 3 19	7,559 9 5
Bhagaruti „	...	...	...	...	...	...
Gorakhpur „	25 0 0	1,136 2 6	...	334 9 9	25 0 0	1,470 12 3
Jhansi Division ... Jhánsi Forests	...	...	...	...	...	...
Jhansi Division ... Lalitpur „	...	...	...	...	...	...
Jhansi Division ... Jalaun „	...	...	...	...	...	...
Rohilcund Division, ... Bareilly „	...	...	...	...	...	...
Rohilcund Division, ... Bijnaur „	...	...	...	...	...	...
Total ...	700 3 10	12,411 12 10	129 0 18	3,631 3 9	829 3 28	16,043 0 7

AREA OF FOREST TRACTS PROTECTED FROM FIRE.

Forest tracts protected from fire.	Area in 1872-73.	Total cost.	Additional area protected in 1873-74.	Amount expended in 1873-74.	Total area protected up to 1873-74.	Total expenditure incurred up to 1873-74.
	Acres.	Rs. a. p.	Acres.	Rs. a. p.	Acres.	Rs. a. p.
Kumaon Division	12,800	385 8 6	3,840	524 4 0	16,640	909 12 6
Garhwal „	3,673	130 4 9	No statement received this year.			
Dehra Dún „	306	405 0 0	3,534	751 14 8	3,840	1,156 14 8
Jaunsar „	Unestimated.	...	Unestimated.	55 12 0	53,756	55 12 0
Bhagaruti „	...	...	...	...	...	...
Gorakhpore „	...	30 0 0	70	...	70	30 0 0
Jhansie Division ... Jhánsi Forests	...	...	...	...	...	...
Jhansie Division ... Lalitpur „	...	...	...	...	...	...
Jhansie Division ... Jalaun „	...	...	...	...	...	...
Rohilcund Division... Bareilly „	...	...	...	...	...	...
Rohilcund Division... Bijnaur „	...	...	...	...	...	...
TOTAL ...	16,779	950 13 3	7,444	1,331 14 8	74,306	2,152 7 2

PROSECUTIONS FOR BREACHES OF THE FOREST RULES.

		Number of Prosecutions.		*Convictions obtained or still pending.*	
		Number of cases.	Number of persons.	Number of cases.	Number of persons.
Kumaon Division		199	261	117	171
Garhwal „		No	State	ment re	ceived.
Dehra Dún „		13	24	13.	24
Jaunsar „		34	63	31	60
Bhagaruti „		...	...	...	...
Gorakhpur „		8	15	7	13
Jhansi Division	Jhánsi Forests ...	3	8	3	8
	Lalitpur „ ...	...	...	...	...
	Jalaun „ ...	...	...	...	...
Rohilcund Division.	Bareilly „ ...	...	...	...	...
	Bijnaur „ ...	...	...	...	...
	Total ...	257	371	171	276

OFFICE OF CONSERVATOR OF FORESTS, N.-W. P.:
Dated Naini Tal, the 8th August, 1874.

G. GREIG,
Offg. Conservator of Forests, N.-W. P.

No. 207 F./C. of 1874.

GOVT., N.-W. PROVINCES.

PUBLIC WORKS DEPARTMENT.

FOREST BRANCH.

DATED NAINI TAL, THE 23rd OCTOBER, 1874.

ANNUAL FOREST REPORT FOR THE NORTH-WESTERN PROVINCES FOR 1873-74.

READ again the following papers :—

Budget Estimate of the Forest Department of these Provinces for 1873-74.

Government of India orders thereon, No. 17/781, dated Simla, the 1st July 1873.

From Officiating Conservator of Forests of these Provinces, No. 244, dated 14th ultimo, covering statement of receipts and charges of the Forest Department for the year 1873-74, and this Office docket No. 183F.-C., of the 25th idem, transmitting the same to the Government of India.

Read also—

Memo. No. 208, dated 8th August 1874, from the Officiating Conservator of Forests in these Provinces, submitting the Forest Report for 1873-74.

Introductory Remarks.

The Officiating Conservator of Forests has this year prepared his report in the form laid down in Government of India Circular No. 18, Forest, dated the 4th November 1868, and as required by the Government of India in their orders on the report for the previous year. The Lieutenant-Governor observes that the report is incomplete for want of data supplied by the officer in charge of the Garhwál Forest division.

General Financial Results.

2. The transactions during the year under report show the following financial results :—

Receipts	... Rs.	16,29,496
Expenditure	... „	9,66,506
Surplus to credit of Imperial Revenue	... Rs.	6,62,990

or, recorded as directed by Government of India letter No. 25-17, dated 4th January 1873—

Realizations	... Rs.	16,29,496
Deduct—		
Realized on account of transactions of previous periods	... „	4,58,785
Balance	... Rs.	11,70,711

Add—

Outstandings on account of the year ...	Rs.	1,05,287
Minus for bad debts, ...	„	2,045
		1,03,242
Value of the year's transactions	Rs.	12,73,953
Disbursements	Rs.	9,66,506

Deduct—

Disbursed on account of transactions of former periods	„	3,95,554
Balance ...	Rs.	5,70,952

Add—

Due for transactions during the year under review, but not yet disbursed	„	1,96,460
Real cost of the transactions of the year ...	Rs.	7,67,412
Value of the year's transactions	Rs.	12,73,953
Cost ditto ditto	„	7,67,412
Net result	Rs.	5,06,541

Add—

Difference between value of stock at commencement and close of year	Rs.	2,34,871
Real net result of the transactions during the year	Rs.	7,41,412

3. The "Actuals" compare favorably with the "Regular Estimate," *viz* :—

	Regular Estimate, 1873-74.	Actuals, 1873-74.	*Difference.* Increase.	*Difference.* Decrease.
	Rs.	Rs.	Rs.	Rs.
Receipts ...	14,97,355	16,29,496	1,32,141	...
Expenditure ...	10,22,654	9,66,506	...	56,148
Surplus ...	4,74,701	6,62,990	1,32,141	
			56,148	add.
More than was anticipated in "Regular Estimate," Rs.			1,88,289	

As the "Actuals" have thus exceeded the figures in the "Regular Estimate" by nearly two lakhs, the Lieutenant-Governor does not consider that the forecast was made in so reliable a way as should have been the case.

4. There has been, as will be observed from the following statement, a marked increase in the surplus of Forest Revenue in these Provinces for each of the last three years.

This is in a great measure due to the income derived from sleepers supplied by the forests to the Rajpútana State Railways; but the facilities afforded to traders for the export of timber and forest produce from

the forests, and the encouragement given to the public to purchase timber at Forest depôts in the plains, have also led to this result of forest management; while the increase of revenue, with at the same time an actual decrease of expenditure, is a fact specially to be commended:—

	Actuals, 1871-72.	Actuals, 1872-73.	Actuals, 1873-74.
	Rs.	Rs.	Rs.
Receipts	10,33,134	16,42,857	16,29,496
Expenditure	9,70,269	10,19,012	9,66,506
Surplus ...	62,865	6,23,845	6,62,990

5. From a comparison of the "Actuals" with the amounts provided in the Budget-estimate for the year, the following result is arrived at :—

	Budget-estimate, 1873-74.	Actuals, 1873-74.	*Difference.*	
			More.	Less.
	Rs.	Rs.	Rs.	Rs.
Receipts	14,25,000	16,29,496	2,04,496	...
Expenditure ...	11,24,000	9,66,506	...	1,57,494
Surplus	3,01,000	6,62,990	2,04,496	1,57,494 add.
			1,57,494	
More than Budget-estimate, ... Rs.			3,61,990	

There was therefore a net income of more than 3½ lakhs in excess of what was anticipated when the budget for the year was framed.

6. The following table exhibits the "Revenue" realized by each Forest division, as compared with that anticipated in the Regular Estimate for 1873-74 :—

Division.	Regular Estimate, 1873-74.	Revenue realized.	*Difference.*	
			Less.	More.
	Rs.	Rs.	Rs.	Rs.
Direction	30	8	22	...
Kumaun	2,13,150	3,65,687	...	1,52,537
Garhwál	1,41,430	1,53,795	...	12,365
Dehra Dún	78,800	78,270	530	...
Jaunsar	4,89,490	5,12,336	...	22,846
Bhagiratti	5,26,200	4,66,591	59,609	...
Gorakhpur	24,400	24,796	...	396
Rohilkhand	18,440	22,421	...	3,981
Jhánsi	5,415	5,592	...	177
Total ...	14,97,355	16,29,496	60,161	1,92,302
			Deduct	60,161
More than Regular Estimate			... Rs.	1,32,141

Revenue.

7. There has been an " increase" of revenue over that provided for in the Regular Estimate in six out of the eight Forest divisions, whereas in the remaining two there was a " decrease." Only in the Kumaun and Jaunsar divisions was such " increase" considerable, *viz.*, Rs. 1,52,537 and Rs. 22,846, respectively ; whilst in the Bhagiratti division there occurred a large " decrease" in revenue, amounting to Rs. 59,609. This " decrease" is ascribed by the Conservator, in paragraph 80 of his report, to the closing, before the end of the financial year, of the Ganges Canal, and the consequent short delivery of sleepers from that division.

8. The following statement gives a comparison between the revenue received in 1872-73 and 1873-74 in the several Forest divisions :—

Division.	Revenue, 1872-73	Revenue, 1873-74.	Difference.	
			Less.	More.
	Rs.	Rs.	Rs.	Rs.
Direction	58	8	50	...
Kumaun	2,67,339	3,65,687	...	98,348
Garhwál	2,08,701	1,53,795	54,906	...
Dehra Dún	90,234	78,270	11,964	...
Jaunsar	3,23,834	5,12,336	...	1,88,502
Bhagiratti	6,94,014	4,66,591	2,27,423	...
Gorakhpur	29,041	24,796	4,245	...
Rohilkhand	25,701	22,421	3,280	...
Jhánsi	3,935	5,592	...	1,657
Total ...	16,42,857	16,29,496	3,01,868	2,88,507
			2,88,507	deduct
Decrease in 1873-74 ...	....	...	13,361	

9. There was a " decrease" in revenue in 1873-74 as compared with the previous year of Rs. 13,361, particularly due to the *Bhagiratti* and *Garhwál* divisions. In the former, as already explained in paragraph 7 of this Resolution, a good reason is assigned for such decrease ; but in the latter division, the Lieutenant-Governor is sorry to notice that the Conservator ascribes the loss to the bad health of the officer in charge. His Honor cannot, without further explanation, agree with the Conservator in thinking a financial result satisfactory where the revenue has so much decreased, and expenditure so much increased, as has been the case in this division.

10. *Kumaun.*—The Conservator considers that the large increase in revenue in this division is entirely due to the good management of the officer in charge, Captain Campbell. Mr. Greig explains that this increase is chiefly under heads—I., " Timber brought to depôt"; II., " Timber, &c., removed by purchasers;" and VI., " Minor forest produce." A large number of sál logs, which had been in stock for some time, and were deteriorating, were sold, and a good deal of sawn timber, besides much inferior wood, was disposed of advantageously. His Honor accepts the opinion that Captain Campbell has worked his division advantageously.

11. A slight increase in the working of the Ránikhet sub-division is observed as below, which is satisfactory with reference to paragraph 10. of the Resolution of this Government on the previous Forest Report.

1873-74	...	Rs. 3,292
1872-73	...	„ 2,144
Increase	...	Rs. 1,148

12. *Dehra Dún.*—In this division there has been a decrease in revenue during 1873-74, both as compared with the figures of the Regular Estimate, as well as the receipts in 1872-73. This is due, as explained in paragraph 68, of Conservator's report, to the felling of sál timber having been stopped, thus reducing the receipts under heads I. and II., "Sale of timber at depôts" and "Timber removed by purchasers." Shaik Mohi-ud-din, Assistant Conservator, seems to have done well.

Revenue, 1872-73.	Regular Estimate, 1873-74.	Revenue, 1873-74.
Rs. 90,234	Rs. 78,800	Rs. 78270

13. *Jaunsar.*—The Conservator, in paragraph 79, reports that the increase in revenue in this division is due to a larger demand for timber for the station of Chakrata, and to a greater number of sleepers having been delivered to the State Railways than was anticipated; also to more chír wood (*pinus longifolia*) having been disposed of than was thought probable, judging from previous results. The Lieutenant-Governor considers the financial results of the working of this division very creditable to the Forest Officer in charge, while the apparently successful introduction of the chír timber to the market is likely to lead to very advantageous results.

14. In the divisions of *Gorakhpur* and *Rohilkhand* there was a small decrease in revenue as compared with the previous year 1872-73. (See statement in paragraph 8 of this Resolution.)

Expenditure.

15. The following statement shows the expenditure incurred by divisions, as compared with 1872-73, as well as with the Regular Estimate for 1873-74:—

Division.	Actual expenditure, A, and B, 1872-73.	Regular Estimate, A, and B, 1873-74.	Actual expenditure, A, and B, 1873-74.	Difference.			
				Less than 1872-73.	More than 1872-73.	Less than Regular Estimate.	More than Regular Estimate.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
Direction	29,389	37,840	28,850	539	...	8,990	
Kumaun	91,361	1,03,404	80,387	10,974	...	23,017	
Garhwál	61,563	84,014	75,267	...	13,703	8,747	
Dehra Dún	46,285	51,006	49,131	...	2,846	1,975	
Jaunsar	3,37,766	2,81,074	2,71,541	66,225	...	9,533	
Bhagiratti	4,25,428	4,26,924	4,24,103	1,326	...	2,821	
Gorakhpur	15,883	26,852	26,303	...	10,421	549	
Rohilkhand	8,026	7,201	7,043	982	...	158	
Jhánsi	3,311	4,239	3,881	...	570	338	
Total Rs. ...	10,19,012	10,22,654	9,66,506	80,046	27,540	56,148	
				27,540	deduct	...	
Saving ...	...	...	...	52,506	...	56,148	

16. There has been a saving on the Regular Estimate of Rs. 56,148, and of Rs. 52,506 on the Actuals for 1872-73, or more than 5 per cent. of the proposed outlay.

Outstandings.

17. The outstandings have been further reduced from Rs. 1,78,516 in 1872-73, to Rs. 1,05,287 in the year under report. His Honor trusts that speedy measures will be taken to reduce the large outstandings in the Jaunsar and Gorakhpur divisions, as they have increased from Rs. 26,609 and Rs. 1,527, respectively, in 1872-73, to Rs. 45,981 and Rs. 23,893, respectively, in 1873-74.

18. Form 23 shows liabilities by the Forest Department of Rs. 1,96,891, of which the share of the Bhagiratti division alone was Rs. 1,69,099: these are no doubt sums due to contractors, which have been adjusted in current year.

Sleeper Operations.

19. The supply of sleepers to the State Railways was carried on by two Forest divisions only, *viz.*, the *Jaunsar* and *Bhagiratti* divisions. The Conservator has fully detailed, in paragraphs 69 and 70 of his report, the result of the sleeper operations since the works were first started, from which it appears that, from the two divisions to the 31st March 1874, over 10 lakhs of sleepers had been delivered to the State Railways, at a total value of about Rs. 25½ lakhs, and that about 90,000 sleepers remained in stock, and 32½ thousand have been rejected; the profit resulting to Forest Department being about 4½ lakhs of rupees.

The contract work in these operations in the Bhagiratti division seems to have been thoroughly well carried out by Mr. Wilson, and, though more expensive, has been more expeditious than the departmental working of the Jaunsar division.

20. During the year under report, the following sleeper operations were carried on :—

Jaunsar Division.—Deliveries to the Agra State Railway, 6 feet sleepers,		...	106,645
Ditto	Delhi,	ditto, ...	77,205
Ditto	Ditto,	½ do., ...	13,165
Ditto	Muttra Light Railway, 6 feet do.,	...	10,000
		Total, ...	207,015
Bhagiratti Division.—Deodar railway sleepers,		...	143,634
Ditto refuse from sawings,		maunds	78,881
Waif and driftwood fuel,		ditto	24,869

Timber in stock.

21. The value of timber on hand on the 31st March 1874, is estimated by the Officiating Conservator to be Rs. 5,21,210, or Rs. 2,34,871

in excess of that on stock in the previous year. The Lieutenant-Governor observes that there has been a steady increase in the value of timber in stock year by year, as is exhibited in the following statement :—

Year under report.	Value of stock in hand.
	Rs.
Close of 1868-69	67,674
Do. of 1869-70	1,60,888
Do. of 1870-71	1,95,162
Do. of 1871-72	2,68,619
Do. of 1872-73	2,87,339
Do. of 1873-74	5,21,210

The Lieutenant-Governor does not object to this increase so long as the Conservator satisfies himself that the stocks bear a proper ratio to the demand; but large stocks involve considerable risk, both as regards deterioration, fire, theft, &c., &c.

22. During the year, timber depôts were established at Moradabad, Meerut, Cawnpore, and Kálpi in the plains; but there was not sufficient time to stock them and commence sales. The object of these is to throw into the market, at convenient places, timber inferior to sál, yet good for building purposes, to meet a demand which was said to have the effect of inducing the people to cut their mango and other groves; and His Honor hopes to hear, in the Conservator's next report, of their successful working (see paragraph 21 of Resolution of this Government on the last report.)

Timber Sales.

23. The sale of timber in the log has increased as compared with the previous year, and there appears to be no doubt now that the timber trade in these Provinces is improving, and that prices will hold good. The sales in the Kumaun Division have nearly doubled in 1873-74 as compared with the previous year, as shown in the margin, and the rates were also more remunerative. This is in accordance with the view of probabilities in respect of the demands for timber from the Kumaun forests noted in paragraph 23 of Resolution No. 348F.-C., dated 22nd October, 1873, on last year's Annual Forest Report.

		Rs.	a.	p.
1872-73, Rs. 88,773-4-6,	average amount per 100 cubic feet...	84	0	11
1873-74, „ 1,59,217-5-5,	ditto ditto ...	115	14	0

It appears from paragraph 65 of the report, however, that in the Kumaun Bhábhar forest, 38,639 cubic feet of sál timber were felled and brought to the depôts during the year; while during the same period no less than 203,001 cubic feet of first-class dry timber was removed by purchasers. These figures seem to the Lieutenant-Governor very remarkable, and he cannot help suspecting, from what he has heard from local officers, that dishonest traders find it profitable to have dry timber prepared for them at a season when conservancy operations are necessarily slack. This subject deserves most careful inquiry. It seems to the Lieutenant-Governor probable, not only that the trade in dry timber ought to be dis-

couraged, but that it should be stopped altogether. If sál trees dry up and fall in this extraordinary way, it would apparently be better that the Forest Department should supply the depôts as far as possible from fallen trees. The value of the Government timber must be seriously depreciated if good fallen timber can be taken out of the forests at a low rate.

24. The following statement exhibits the value of timber sold in the log during the last six years :—

Year.	Value of timber sold.
	Rs.
1868-69	4,76,063
1869-70	1,64,070
1870-71	70,031
1871-72	74,004
1872-73	2,20,628
1873-74	2,64,835

25. The sums realized for timber in the log in 1873-74, compared with 1872-73, were in the several Forest divisions of these Provinces as follow:—

Division.	1872-73.	1873-74.	Difference.	
			More.	Less.
	Rs.	Rs.	Rs.	Rs.
Kumaun ...	88,773	1,59,217	70,444	...
Garhwál ...	72,454	59,569	...	12,885
Dehra Dún ...	25,106	13,741	...	11,365
Jaunsar ...	29,413	14,047	...	15,366
Bhagiratti ...	...	7,802	7,802	...
Gorakhpur ...	2,044	7,090	5,046	...
Rohilkhand ...	2,838	3,157	319	...
Jhánsi ...	...	212	212	...
Total ...	2,20,628	2,64,835	83,823 39,616	39,616 deduct.
More than 1872-73 ...	...	...	44,207	

It is noticed that only in three out of the eight Forest divisions the timber sales were below those of 1872-73. In the Dehra Dún division this is accounted for by the order that for the present the felling of sál timber is prohibited, whilst in the Jaunsar division, attention was more energetically directed towards the preparation of sleepers for the State Railways. In the Garhwál division, however, the decrease in sale of timber is not satisfactorily explained, as, with similar management, similar results, though less in degree, might have been expected from this division as from Kumaun.

26. From statement No. 26 it is noticed that other descriptions of timber, such as scantlings, golas, bullahs, fuel, &c., were sold during the year under report, at an aggregate amount of Rs. 9,32,783.

Inspections.

27. The Officiating Conservator has visited nearly the whole of the Forest divisions during the year under report, and promises to inspect the forests of the Jhánsi division in January or February 1875. The Lieutenant-Governor will be glad to receive a special report by Mr. Greig of his inspection of the latter, and his views on the best means for improving their capabilities and conservancy.

Conservancy, Jungle Fires, &c.

28. The Lieutenant-Governor is glad to notice the care which is being taken by Forest Officers in the protection from fire of the reserved forests. Although the results of their precautions in 1873-74 may have been small, still the endeavor to isolate some of the forests, by cutting and clearing lines round and through them, and thus making compact blocks, in which no trespasser is permitted, will, when all have been so protected, perhaps lead to the result aimed at. The Government looks to the Conservator for further progress, year by year, in thus forming compact, well protected blocks, and trusts he will fully impress on his subordinates the importance of this measure. In paragraphs 48 to 55 of his report, the Officiating Conservator has fully reviewed the necessity for further protection of the Government forests, and it does not appear necessary therefore to enter more into the subject. The working plan of the Gorakhpur forests, prepared by Mr. Amery, the Deputy Conservator in charge, and alluded to by Mr. Greig in paragraph 55 of his report, is now before the Government of India.

Plantations.

29. Paragraphs 56 to 63 of the Officiating Conservator's report deal with this subject; but altogether, from a perusal of these paragraphs, the Lieutenant-Governor cannot think the progress of the plantations as yet very satisfactory, or the schemes for them based on any very sound footing. It has been represented to His Honor, on high authority, that there has sometimes been too great a tendency to attempt new plantations in situations where the necessary conditions of shade and suitable soil do not exist; and that it is ordinarily more desirable to devote attention to the renovation, by natural means, of exhausted forests, rather than to the establishment of new plantations. There can, His Honor believes, be no doubt that sál forests, such, for instance, as those which are found in the Patli and Kotri Dúns, will be speedily renewed if fires are kept out, and there ought to be no great difficulty in accomplishing this, provided that proper measures are taken, and all traders in minor forest produce are rigidly excluded. The latter condition must often be essential, and the loss of the small amount of revenue which would be sacrificed would be of no importance.

It may be hoped that, as the Conservator will have the advantage this cold season of personally consulting with the Inspector-General, that these important adjuncts to forest working may be more systematically dealt with, as required by the Government of India in the 8th paragraph of their orders on previous report, No. 1321, of 12th November, 1873. These remarks do not apply to the Ránikhet sub-division, wherein the plantations have been comparatively successful.

30. Last year a special report was submitted by Mr. Craw on the Ránikhet nurseries and orchard, and forwarded to the Government of India; this year the Officiating Conservator has embodied his remarks thereon in paragraph 58, pages 28 and 29 of his Annual Forest Report. The Lieutenant-Governor has read with much interest the result of Mr. Craw's labours, which show that the propagation of fruit, timber, fuel and ornamental trees is being vigorously and successfully carried on.

31. In respect of the faulty packing of seeds noted by Mr. Craw, the attention of the Government of India will be drawn thereto, though it seems doubtful if chesnut seeds should be dried.

Maps and Boundaries.

32. The Forest Officers seem to be in possession of good maps of their forest divisions, and some progress has been made in demarcating the forests; but, until this is fully done and proper valuation surveys made, it seems to the Lieutenant-Governor that the Conservator must be working very much in the dark as to the proper amount of timber to be taken out of the forests; and though His Honor is pleased to express satisfaction at the financial results of the year, it must be understood that that satisfaction would be much more to the point if he were sure that the timber was being brought out on proper working plans, which have some relation to the reproductive powers of a forest. From a perusal of many of the paragraphs of Mr. Greig's report, it is evident that many of the best forests are being worked by guess; and the only assurance that the Lieutenant-Governor has that these guesses are not leading to an extravagant working of the forests, is His Honor's confidence in the Officiating Conservator's experience and caution. With far better financial results than those indicated by Mr. Greig in this report, the Lieutenant-Governor would be far from satisfied if he thought that they were secured at the expense of an improper denudation of the forests, especially in respect of sál timber.

On this point the Conservator himself cannot be satisfied until his forests are properly demarcated, valued, and worked; and Sir John Strachey would urge Mr. Greig to take advantage of his tour with Dr. Brandis to put all this on a systematic footing.

33. The plan adopted in the Garhwál forests, whither Mr. Whittall was deputed to temporarily demarcate them, in anticipation of the advent of Captain Bailey, is a good one to follow out, but the advantage of which will be wholly lost unless Captain Bailey really follows up the preliminary work.

34. The division of the Kumaun Bhábar forest into nine blocks is so far satisfactory, but it is understood that this is not quite settled, while much remains to be done in these very important sál forests in respect both of area and demarcation. And nothing has been done in respect of their valuation, or in forming working plans for them; and the same remarks apply to the five blocks of the Garhwál Bhábar forests.

35. Although this Government knows nothing of the results of Captain Bailey's survey in the Dún, His Honor doubts not that fair pro-

gress is being made. When all the forests are demarcated, no time should be lost in preparing the valuation surveys and working plans. The interval of rest given to the forests by the prohibition to the cutting of sâl, will be, no doubt, in the meantime of great advantage.

36. The same remarks apply to the Jaunsar division, though a fair advance has been made in demarcation. In the Gorakhpur forests Mr. Amery has done most excellent work, both in demarcation and working plans.

37. The Lieutenant-Governor desires to impress upon the Officiating Conservator that whatever may be the financial results, he can place no reliance upon them, in respect of the manner in which the forests are affeited by his management, until Mr. Greig can show, that at all events the more valuable forests are being worked upon approved plans, with full knowledge of the state of each forest, and its power of reproduction. The Officiating Conservator's attention is called to the remarks on this subject in paragraph 46 of the Resolution of this Government, No. 348F.-C., of the 22nd October 1873, on his previous report, and to paragraphs 4 and 7 of the Government of India's orders thereon, No. 1321, dated 12th November 1873.

38. The forests of the Rohilkhand and Jhánsi divisions being unreserved, and of the Bhagiratti division being leased, do not call for any remarks here.

Roads, Bridges, and Buildings.

39. The following works were carried out during the year :—

Forest Division.	Work.	Description.	Cost.
			Rs.
Kumaun ...	Cart-road from Aurdanda to Bijrani.	3 miles long, 12 feet wide.	
	Ditto Sauldí to Gurjia Sot.	Ditto ditto.	
Jaunsar ...	Road from Durani to Kailo.	9 miles long, 4 feet wide.	2,136
	Ditto do. to Kanasar,	6 ditto, 4 ditto.	
	Ditto Kutian to Koti,	3 ditto, 2 ditto.	
	Forest chauki at Dalipur in the Dehra Dún.	Of Sun-dried bricks, and roofed with deodar shingles.	1,964
	Godown at Chakrata ...	Pucka masonry and deodar shingle roof.	
	Rest-house at Maindrát, on the Tons river.	Dry stone masonry walls and deodar shingle roof.	

Some rocks were also blasted on the Jumna near the rafting station of Dag Pather, Jaunsar division, and the river cleared to make channels for rafts to pass when the water was low : the cost of these operations was Rs. 225.

40. The Lieutenant-Governor is sorry to notice the complaint made by the Officiating Conservator in paragraph 59 of his report, that the existing forest roads in the *Garhwal* division were not kept in proper repair during the year.

Breaches of Forest Rules.

41. If the *Garhwál* division be excepted (no annual report having been received from the Deputy Conservator in charge), there were altogether 257 cases of prosecutions, of which 171 were either successful, or are still pending ; 371 persons were implicated, of whom 276 were either convicted, or are still under trial.

General Remarks.

42. Mr. Bagshawe, Mr. Brereton, and Mr. O'Callaghan, seem to have done well, and Mr. Amery and Captain Campbell specially so, while Mr. Palmer should be warned to take more care.

43. The good service of Messrs. Whittall and O. Greig will be noted to the Government of India.

44. Mr. Braidwood, in charge of the Conservator's Office, should be commended for the manner in which he has worked the Conservator's Office ; but His Honor can hold out to him no hope of any extra allowance for serving at Naini Tal. Such special allowances are not looked upon with favor by His Honor. He observes that officers in the course of their service are located at expensive and at cheap places, and that there would be as much reason for reducing pay in a cheap locality as there is for increasing it at an expensive one.

45. Finally, the Lieutenant-Governor remarks that the report, although in the proper form, is unnecessarily long, and burdened with a great quantity of useless matter, especially in its first 8 or 10 pages.

No. $208\frac{F.}{C.}$

ORDER.—Ordered, that copy of the foregoing, with copy of Conservator's report, be forwarded to the Secretary to Government of India, Department of Agriculture, Revenue, and Commerce, for the information of His Excellency the Viceroy and Governor-General in Council. Attention is invited to paragraph 43.

Nos. $209\text{-}14\frac{F.}{C.}$

ORDERED also that copies be forwarded to the Commissioners marginally noted, as well as to the Accountant-General, North-Western Provinces.

Meerut, Kumaun, Rohilkhand, Benares, Jhánsi.

No. $215\frac{F.}{C.}$

ORDERED finally, that a copy be forwarded to the Conservator of Forests, North-Western Provinces, with reference to his No. 208, dated 8th August last. Special attention is directed to paras. 9, 17, 21, 22, 23, 27, 28, 29, 32, 37, and 45 of this Resolution.

ALEX. FRASER, COL., R.E.,
Secretary.

No. 85, dated the 25th January 1875.

From—A. O. HUME, Esq., C.B., *Secretary to the Government of India,*

To—*The Secretary to the Government of the North-Western Provinces.*

I AM directed to acknowledge the Forest Report for 1873-74, with the orders thereon of His Honour the Lieutenant-Governor.

These orders enter so fully into all matters brought forward in this important report that very little remains to be said on the subject by the Government of India.

2. His Excellency the Governor General in Council cordially endorses the remarks recorded in paragraphs 32 and 37 of the review. The increasing surplus revenue of the Government forests in the North-Western Provinces is satisfactory, provided it is accompanied by an improved condition, and a steadily increasing capital value of these domains. Numerous passages in this and previous reports give evidence of the increasing demand for timber, bamboos, and other forest produce in the towns and among the agricultural population of the plains, who depend for their supplies upon the Himalayan and sub-montane forests under control of the Forest Department of the North-Western Provinces. What the Officiating Conservator says regarding the establishment of timber depôts in the plains, and the export of cheer timber from the Tonse forests, shews that he is aware of the growing demand for wood, and has taken steps to meet it. It does not, however, appear from the report that Mr. Greig fully appreciates that the forest resources at the disposal of Government in the North-Western Provinces may some day be found insufficient to satisfy the demands which will be made upon them. Thus of the Naini Tál forests he says that they are quite capable of yielding all that is likely to be ever required from them, and that division lines, blocks, or compartments are not at all necessary. The same is said in paragraph 60 of the Jaunsár forests. Again, in paragraph 45 Mr. Greig states that there is no necessity to attempt to commute any prescriptive rights in Jaunsár, for under the present arrangement the forests are quite enough for all Government purposes.

These and similar expressions seem to leave it doubtful whether the Officiating Conservator has fully realized the future importance of the Government forests in the North-Western Provinces.

3. From the data recorded in this report it clearly appears that, though the Government forests are extensive, yet a large proportion is burdened with grazing and other rights and privileges of third parties to such an extent that any considerable improvement of their productiveness at present is out of the question.

Thus the importance of the forests in the British Pergunnahs of Jaunsár Báwar, not only for the military station of Chakrata, but more so for the supply of the rich villages in the outer hills and the plains, can hardly be overrated. Yet 15,718 acres of first class forest is all that Government has under complete control in that district. The second class forests cover 76,500 acres more; but in these deodar and other timbers are cut largely by the villagers, and grazing, and in many places fires, prevent reproduction. In the Dún and Sewalik forests a small portion only is so far under complete control that cattle and fires can be kept out, and the settlement of the grazing rights, which His Excellency in Council gathers from the facts recorded in this and previous reports must sooner or later be attempted in that district, may result in leaving a limited area only of good forest land in the sub-montane tract between Jumna and Ganges at the disposal of Government.

4. The operation of liberating the forests of grazing and other rights will doubtless be most beneficial to the public interests of which Government in the Forest Department is the guardian, as well as to the individual right-holders; but the probable result will in most cases be a considerable diminution of the Government forest area, and under these circumstances the Conservator should carefully consider matters before pronouncing any Government land unfit for forest purposes.

In paragraph 37 Mr. Greig mentions the grassy plains of the Eastern Dún, which, as would appear from the report, it is intended to hand over for cultivation. They may now only contain the remains of sál forests, and patches of sissú, khair and tun; but, as explained in the same paragraph, the fires burn with such vigour in these grass lands that every seedling is killed, and growing trees are considerably injured. From previous reports it is known that the Dún furnishes large quantities of khair wood pestles for the sugar-mills of the Doáb, and in several passages of the present report Mr. Greig speaks of the scarcity of khair, and of his attempts to increase the supply. The Conservator should consider whether it is not essential to preserve those portions at least of these grassy plains which are capable of producing the valuable trees mentioned. The extension of cultivation in the Dún will certainly be a great advantage in every respect, but whenever forest lands are given up for cultivation, the opportunity must be used to free the adjoining forests of grazing privileges.

5. Nor should it be lost sight of that forest is more valuable in proportion to its proximity to the plains. If it were, for instance, possible to obtain complete control over any of those tracts below the sub-montane road in Kumaun, which are mentioned in paragraph 34 of the report, such tracts might be extremely valuable on account of their proximity to the open country, though they may at present contain no valuable sál. This is likely to be the case even to a greater extent in the Eastern Saháranpur forests, which are said to produce wood of inferior quality only, fit for nothing but fuel and poles for native buildings. These, indeed, are the very articles which it is desirable to produce in large quantities and at low prices for the agricultural population of the open country. The first step, without which no real progress in forest management in this country is possible, is to obtain such control over the land as will make it possible to exclude cattle and fires, and when that has been accomplished, improvements by planting and thinning may commence; and it is evident that in considering the question what forests should be given up, and what forests should be retained, their situation with regard to export lines and local consumption must receive prominent attention.

6. The area of the Government forests in the North-Western Provinces recorded in the statements appended to the report, does not tally with the figures entered in paragraphs 10 to 30, nor with the statement appended to last year's report.

If the information now given is correctly understood, the following forests are under the control of the Forest Department in the North-Western Provinces:—

(1) *Jaunsár*, 15,718 acres (=24 square miles) first, and 76,559 acres (=119 square miles) second, class forests.

The rights of Government, and the privileges conceded to the agricultural population of the district in the second class forests, are clearly stated in the extract from the settlement paper given in paragraph 31 of the report.

(2) *Dehra Dún*, 34,000 acres (=53 square miles) first, and 126,000 acres (=196 square miles) second, class forests. His Excellency in Council would be glad to learn which are the first and which are the second class forests in the Dún. The privileges conceded in the second class forests are stated to be provision of a sufficiency of grazing, firewood and grass against payment. It is not stated who are entitled to these privileges, but it seems probable that they are conceded only to the inhabitants of old-established villages, and may not be claimed by new villages.

(3) *Saháranpur*, 195 square miles, said to be subject to the same privileges as the second class forests of the Dún.

(4) *Bijnor*, 86 square miles, including the Chandni forest, leased to the Roorkee workshops, and managed by the Superintendent of those workshops.

(5) *Bareilly*, 137 square miles. No information concerning rights and privileges in these two districts is given in the report. The statement of 1872-73 enters the Bijnor forests as reserved, and those of Bareilly as unreserved; in this year's statement both are entered as unreserved (2nd class) forests.

(6) *Gorakhpur*, 73,607 acres (=115 square miles). No free rights, but the villagers near the forests have to be provided, against payment, with timber, firewood and thatching grass.

(7) *Jhansi Division*, 1,938 acres in the Jalaun, 20,101 acres in the Jhansi, and 113,280 acres in the Lalitpur district; total 211 square miles.

In the statement are entered 33 square miles in Jhansi, and 177 square miles in Lalitpur, under unreserved forests; but the nature and extent of forest rights or privileges with which these lands are burdened is not given.

(8) *Rânikhet*, about 70 square miles of second class forests,—the rights of the villages are explained in paragraph 42.

(9) *Naini Tál*, about 30 square miles,—forest rights not stated.

(10) *Kumaun Bhabar*, about 700 square miles of second class forest, including the tract leased to the Kumaun Iron Company. A general statement of rights is given in paragraph 41, and from what is said it appears that there is a prospect of liberating part of these forests and placing them in the first class.

(11) *Garhwál Bhabar*, 600 square miles, which are said to be unencumbered with any rights except just along the outer range.

(12) *The leased forests in Native Garhwál.* The nature of the forest rights here, and what has been done to regulate the exercise of these rights, are satisfactorily explained in paragraph 46.

7. This is a splendid extent of forest land, and His Excellency in Council trusts that, by the exercise of due care and patience in attempting to commute the rights and privileges which now interfere with its improvement, a considerable area may eventually be converted into first class forests. It is suggested, for the consideration of His Honour, that in the next report the Conservator might advantageously give, in the manner here indicated, a more complete account of these questions than is recorded in the present report. For this purpose he might conveniently draw sections 1 and 2 of the chapter on State and leased forests into one.

It is to these Government estates mainly that the population of one of the richest and most progressing provinces of the empire will in future look for their supplies of wood, bamboos, gum, and other forest produce; and these tracts may yet be found unequal to the task, unless a portion at least can, by protection from fire, and by gradual improvement, be brought into a better state of productiveness than that in which they now are. The first step in this direction, His Excellency in Council thinks, is clearly to understand in detail the obstacles which stand in the way of attaining this important object.

8. The proposed forest rules are mentioned in paragraphs 31 and 41 of the report. On this subject a separate communication will be made to you. The Governor General in Council, however, fails to understand why the selection of the first class forests in the Kumaun Bhabar should depend upon the wording of these rules. It has never been the intention of the Government of India, by means of any forest rules or legislation, to deprive the people in the vicinity of the forests of the enjoyment of those privileges which are necessary for their well-being. The best question would seem to His Excellency in Council to be in this case, what are the reasonable requirements of the villages within forest lands at the present time? These requirements must be supplied, and for that purpose a sufficient area of forest land must be made over to each village. The land which remains, unless other rights exist, is at the disposal of Government for public purposes, and may, His Excellency in Council trusts, be gradually converted into productive forests. In a comparatively thinly inhabited country like the outer hills of Kumaun, there ought not, His Excellency in Council thinks, to be any difficulty in arranging matters in this manner.

9. Forest legislation must certainly lay down certain principles—*e. g.*, it must prevent the growth of forest rights by prescription in a Government forest: it must give power to regulate the exercise of forest rights by permitting the periodical closing of certain blocks, and by prohibiting the sale of forest produce taken out by right-holders: it must prescribe a mode of procedure in commuting such rights: and it must prescribe penalties for certain offences which are not distinctly specified in the Penal Code, such as trespass, the lighting of fires, and the injury of trees in the Government forest; but the settlement of forest rights can, His Excellency in Council thinks, in many cases be effected, as has been done in Jaunsár and other districts, without waiting for the issue of any forest rules.

10. Of the twelve main forest ranges mentioned above, it is understood that

three, Bijnor, Bareilly and Jhansi, are in charge of the civil officers, leaving nine divisions to be provided for by forest officers. Of these, Jaunsár and the Dún forests require, and have, it is understood, one additional officer each; the Naini Tál forests are under the Assistant Conservator who has charge of the Conservator's Office, and the other divisions each require one officer. Thus it would appear that, including the charge of the Central Office, eleven effective officers are required. Allowing two additional officers for special work, and to supply vacancies, the strength of the effective staff of the forests in the North-Western Provinces should not be below thirteen in addition to the Conservator.

The number sanctioned is fourteen,* and it is therefore apparently possible, when the exigencies of the service in other provinces demand it, to reduce the present number by one officer. The Lieutenant-Governor may rest assured that such a reduction will not be needlessly maintained, for His Excellency in Council is fully aware that satisfactory progress in the organization and working of these important domains will mainly at present depend upon the number of efficient superior officers available. But as an urgent necessity for the transfer of one of the North-Western Provinces officers has lately arisen, it has been thought right to take this opportunity of explaining more in detail the grounds on which it is hoped that, whenever this proves absolutely necessary, the Government of the North-Western Provinces will be able to carry on the work with only thirteen officers.

* 3 Deputy, 8 Assistant, and 3 Sub-Assistant Conservators.
Present incumbents: 3 Deputy, 7 Assistant, and 4 Sub-Assistant Conservators.

11. The advantage of connecting more closely the civil and forest administration of the country has on various occasions been brought to the notice of His Excellency in Council. The first step of progress in that direction is to make the boundaries of forest divisions to coincide as much as possible with those of collectorates and other main civil divisions. In this respect it is gathered from the present report that the forest organization of the North-Western Provinces is satisfactory with one exception. The Dún officer ought, if possible, to have charge of such forests only as are within the jurisdiction of the Superintendent of the Dún, and the forests in the Saháranpur district ought to form a distinct charge under a separate officer who could then be placed in a definite relation to the Collector of Saháranpur. Mr. Greig does not seem to appreciate sufficiently the importance of these forests. His Excellency in Council feels assured that, if it is possible to protect selected portions from grazing and fires, they will improve steadily, and will, owing to their proximity to the open country, be of great importance. For the adjustment of grazing privileges, which there, as everywhere else, will be found to be the great obstacle in the way of improvement, the Collector will more readily co-operate with the forest officer under the arrangement here indicated. If this suggestion is adopted, the Jaunsár and Dún officer may be placed in a definite official relation to the Superintendent of the Dún; the officers in charge of the Ránikhet, Naini Tál, and Kumaun Bhabar forests may in certain matters be made subordinate to the Kumaun district officer; while the limits of the Garhwál and Gorakhpur charges also coincide with those of the civil districts.

12. The Governor General in Council will be ready to consider any proposals which His Honour may desire to make regarding the survey of the sál forests of Garhwál and Kumaun by Captain Bailey, which is alluded to in paragraph 33 of the review. As a preliminary measure, Captain Bailey has already been authorized, on the suggestion of the Inspector-General of Forests, to accompany that officer to Garhwál in order to discuss on the spot with the Conservator of Forests the plan of this work.

13. Mr. Greig's services are not specially brought to notice by the Government of the North-Western Provinces, but the Governor General in Council is glad to gather from several passages in the review that His Honour has been satisfied with his zeal, energy, and good management. Mr. Whittall's promotion was the subject of a separate communication, and regarding Mr. O. Greig the Governor General in Council desires again to acknowledge his claim, and regrets exceedingly not yet being able to promote him on account of the large number of supernumerary Assistant Conservators not yet absorbed in the sanctioned scale.

REPORT ON PANJAB FOREST ADMINISTRATION FOR 1873-74.

No. 1815 of 1874-75.

FROM

CAPTAIN W. STENHOUSE,

Officiating Conservator of Forests, Panjáb.

To

C. M. RIVAZ, ESQUIRE,

Officiating Secretary to Government, Panjáb.

Dated Lahore, 8th September 1874.

SIR,

I have the honor to submit the Annual Report of Forest Administration in this Province for the year 1873-74.

I have the honor to be,

Sir,

Your most obedient servant,

W. STENHOUSE, CAPTAIN,

Officiating Conservator of Forests, Panjáb.

108351

SPECIAL REPORT.

CHAPTER I.—STATE AND LEASED FORESTS.

SECTION I.—AREA AND BOUNDARIES.

Statistics.

1. The areas, past and present, of the State and leased forest reserves are given in the prescribed statistical forms appended to this Report.

Satlaj Division.

Forest demarcation.

2. The reserved forests in the Satlaj Division are still demarcated by marks on boundary trees and by heaps of stones. Mr. Ribbentrop, Deputy Conservator of Forests, has been deputed to collect material for a working plan of the Bassáhir leased forests, and will also superintend their re-demarcation in a more permanent manner.

Bias Division.

Forest demarcation and reservation in Kángra.

3. In the Núrpúr Tahsíl of the Kángra District, Biás Forest Division, 15 square miles and 110 acres of forest have been demarcated as the sole property of Government with the consent of the landowners, who in return have obtained freedom to extend their cultivation without restriction, and graze their cattle all over the rest of their village forests. They will also receive one-third of the proceeds of sales of forest produce instead of one-fourth as formerly, and one-third of the grazing dues, the whole of which was formerly credited to Government. These arrangements have been made by Mr. Duff, Deputy Conservator of Forests, with his usual ability and tact, but they have not yet been confirmed by Government.

4. 2,270 stone pillars were erected round the Seoráj Forest reserves in the Biás Division.

Ravi Division.

Forest reserves on the Rávi.

5. The area of the demarcated forests in the Rávi Division remains the same as last year. The preliminary demarcation of all the leased forests on the Upper Rávi has been completed, with the exception of those on the Bhandal river. The survey of the Banikhet Pine Forest, proposed for reservation near the Military Cantonment at Dalhousie, was in progress till the rains stopped the work.

Chinab Division.

Forest re-demarcation in Pangi.

6. The Assistant Conservator Chináb Division reports that nearly the whole forest area had been set apart as forest reserves in Pangi, and that he has re-fixed the boundaries of more than half, and given up everything but the actual Pine Forests. The boundaries of the Pangi reserves have not yet been finally determined by the Superintendent of Chamba.

Jhelam Division.

Permanent demarcation in Hazárá.

7. Boundary pillars of masonry have been erected round some of the forest reserves in this Division, and all will be demarcated in a similar manner.

Rawalpindi Division.

Forest Division in the Murree and Kahúta Tahsíls.

8. No change in the area and boundaries of the Ráwalpindi rakhs have taken place, but a separation of 30 per cent. of the Government forest lands in the Murree and Kahúta Tahsíls for strict conservancy will shortly be made by the Settlement Officer.

Fuel Reserve Central Division.

Tabular Statement of the Fuel Reserves.

9. The following is a Tabular Statement of the rakh areas in the Fuel Reserve Central Division on the 31st March 1874 :—

District.	No. of Rakhs.	Acres.	REMARKS.
Lahore	80	205,002	13,793 grass preserves for the Military Department. 189,863 Forest Department.
Amritsar	10	3,100	200 grass preserves for the Military Department. 2,900 Forest Department.
Gujránwála	61	242,606	242,606 Forest Department.
Montgomery	55	552,794	5,122 grass preserves for the Military Department. 547,672 Forest Department.
Multán	35	59,958	59,958 Forest Department.
Muzaffargarh	65	113,953	113,953 3,315 lost by erosion.
Derah Ghází Khán... ...	...	...	Untransferred.
Gurdáspúr	...	...	Ditto.
Total ...	306	1,177,413	

Rakh transfers.

10. During the year under report 1,346 acres were retransferred to the District Civil authorities, namely, 755 acres in rakh Bhambah and 591 acres in rakh Bangáli; these lands having been under cultivation for many years.

Exchange of rakhs with the Mititary Department.

11. The Military authorities have returned two rakhs to this Department, and a portion of a third, aggregating in all 6,081 acres, and have received in exchange 4,093 acres, which are more conveniently situated for their purposes. By the arrangement above mentioned this Department has obtained Rakh Mahmúd Búti, which contains 759 acres of land admirably adapted for planting, and contiguous to the Jugián plantation. Rakh Baoli Lehna Singh, area 10,714 acres, has also thus been acquired, and may prove very valuable for plantation purposes, as it is in the line of the Northern State Railway, produces excellent Babúl, and can be irrigated by raising water from the Deg nallah, which flows through it, or a small canal might be cut through the rakh from the Rávi.

12. In the Lahore, Amritsar, and Gujránwála Districts the boundary pillars are in fair order, though constructed of mud, and no boundary disputes have occurred during 1873-74. No alluvion has been added to the area of the inundated rakhs, and erosion has been very slight, except in two rakhs in the Gujránwála District. The area lost in these two rakhs has not yet been ascertained.

Rakh boundaries in the Lahore, Amritsar, and Gujránwála Districts.

13. In the Montgomery District no change of area has taken place. The boundary pillars are being renewed through the agency of the Deputy Commissioner. Three boundary disputes arose, but proved untenable. The rakhs on the river banks in this District do not suffer from erosion. There are about 1,850,000 acres of rakh land in this District under the management of the Deputy Commissioner, and only 552,794 acres under the charge of this Department.

Area and boundaries of the Montgomery rakhs.

Multan Rakhs.

14. In the Multán District no additional rakhs have been transferred to this Department, but application for the transfer of certain selected areas has been made. The mud boundary pillars of the 35 rakhs already made over are not in good order, but no boundary disputes have occurred, nor has any erosion taken place.

Mazaffargarh Rakhs.

15. The whole question of rakh transfers in this District is under reconsideration by the Settlement Department under the orders of the Local Government, but no transfers have taken place. The boundary pillars have been mostly damaged or destroyed, but will be renewed when the rakh settlement has been concluded. 3,315 acres have been cut away by the action of the rivers, and 1,895 acres have been added by alluvion, making an actual diminution of 1,420 acres. The wood growing on land exposed to erosion was cut and stacked beforehand. 17 boundary disputes arose, and have been referred to the Deputy Commissioner and Settlement Officer for decision.

Derah Ghazi Khan Rakhs.

16. The Deputy Commissioner of this District objected strongly on political grounds to the transfer of the 220,311 acres of rakh land reported as transferred last year; and on a further reference to Government being made, it was ordered that 4,000 acres only, to be afterwards selected, should be placed under the control of this Department for strict conservancy, and that the Wazírí rakhs should be placed under the Wazírí chief, Imám Bakhsh, who has been appointed a Sub-Assistant Conservator of Forests for the management of the tracts in question under the orders of the Deputy Commissioner; all other rakhs to be under the control of the Deputy Commissioner.

Gurdaspur District.

17. The acquisition and demarcation of 600 acres of pine forest in this District as a State forest reserve has been sanctioned, provided the landowners consent to the arrangement in return for the following concessions :—

Forests.

(1st). That pine trees growing in their cultivated revenue-paying lands be the absolute property of the owners of the soil.

(2nd). That no further area of waste withint heir village be enclosed now or hereafter.

The proposal to close a sixth of village waste for three or more years in certain selected localities, and to regulate the further extension of cultivation in the forest tracts of this District, has been approved of generally by the Financial Commissioner, who has directed that Forest Rules be drawn up for the management of the forest tracts referred to. Draft rules have been prepared by the Deputy Commissioner of Gurdáspúr.

Northern Fuel Reserve Division.

Transfer of the rakhs in the Bherah Tahsíl, Shahpúr District.

18. The rakhs of the Bherah Tahsíl of the Sháhpúr District, aggregating 147,870 acres, were taken over on the 1st April 1873, long leased rakhs only remaining under the charge of the District authorities.

19. The following is a statement of the rakh areas in this Division :—

Area of the Northern Fuel Reserves.

	Acres.
Area of rakhs in the Gujrát District ...	57,049
,, ,, Jhelam ,, ...	316,203
,, ,, Sháhpúr ,, ...	282,101
Total ...	655,353

Kachchi Shísham tracts.

20. The Kachchi Shísham tracts in the Bannú District have not yet been made over to this Department, but the proposal to mark off two-thirds of the forest blocks as the sole property of Government, and to resign one-third to the landlord, has been approved of by Government, subject to sanction on the Settlement Officer's final report.

Demarcation of the rakhs in the Gujrát District.

21. Some progress has been made in the demarcation of the extensive Pabbi rakh in the Gujrát District, and orders have been issued by the Financial Commissioner for re-demarcating the other rakhs in this District in a permanent manner through the agency of the District authorities.

Jhelam and Sháhpúr rakh boundaries.

The boundaries of the rakhs in the Jhelam District are already marked by means of masonry pillars. In the Sháhpúr District the boundaries of the rakhs have not been properly marked, and encroachments have taken place. The Deputy Commissioner has been asked to verify the boundaries and put a stop to these encroachments.

Plantation Division.

Changa Manga boundary pillars.

22. The boundary pillars of the Changa Manga plantation are in perfect order. Pillars for the demarcation of the adjoining rakh land are ready, and will be placed in position when the survey map of these rakhs is completed. There is, however, no fear of encroachment, as the old Settlement pillars are standing.

Boundary pillars round other plantations.

23. The boundary pillars of the Rávi and Khánwah plantations are in good order ; those of the Jhoke plantation are also in good repair, but it will be necessary to have them closer where the land is bounded by cultivation. In one instance an encroachment to the extent of three acres took place, but was detected and put a stop to. There are

Settlement pillars round the boundary of the Sádhánwáli and Nág plantations, and the boundary pillars round the Jálandhar, Phillour, and Ludiánáh plantations are in good repair.

Boundary ditches & hedges.

24. A ditch has been dug round the Sháhdera plantation, which prevents cattle trespass; and pillars of masonry have been built round the outer boundary of the Sháhdera and Jugián plantations. A prickly hedge has been planted round the Jálandhar plantation, which will, when grown, form an impenetrable fence.

Boundary marks of the Dehli Plantation.

Pillars of sand stone were erected round a portion of the Dehli plantation.

Survey maps of plantations.

25. The following plantations were surveyed and mapped:—

Of the Changa Manga Plantation a new strip of 600 acres.

The Sádhánwálí plantation.
„ Sháhdera-*cum* Jugián plantation.
„ Nág plantation.
„ Jálandhar plantation.
„ Sarangwál rakh.
„ Phillour plantation.
„ Ludiánah plantation.
„ Jagádrí plantation.

Boundary disputes at Changa Manga.

26. The dispute about the boundary of the compartments Nos. 62 and 63 in Block III of the Changa Manga plantation is still undecided, but will be settled as soon as possible.

Erosion.

27. The Sádhánwáli plantation lost by erosion 22½ acres, covered with a uniform growth of Sissú 4 to 5 feet high; 15 acres of the Jugián plantation were carried away by the action of the river, but a number of the trees were saved and sold as fuel.

SECTION II.—REQUIREMENTS OF THE SURROUNDING POPULATION.

Prescriptive rights.

Satlaj Division.

Forest privileges in Bassáhir.

28. The forest rights in the Bassáhir forest remain unaltered. The villagers are allowed to graze their cattle in all forests that have not been cut; they are allowed to clear small patches outside the demarcated forests for cultivation; they are also, on application, furnished with a permit to cut trees for building and other purposes. The trees thus given are principally (kail) Pinus excelsa. Deodar is only given when no other kind of tree is available. The following were granted to the zamíndárs of Bassáhir during 1873-74, but not from Government demarcated forests:—

	Trees.
Deodár trees over four feet in girth	128
Ditto under ditto	485
Kail trees over four feet in girth	565
Ditto under ditto	4,947
Total	6,125

Bias Division.

Free supplies of forest produce from the Núrpúr Forests.

29. 2,250 bamboos were given gratis to zamíndárs in Núrpúr from the forest reserves, but in future no bamboos or other forest produce can be claimed as a right by zamíndárs in Núrpúr, as this was agreed to at the recent demarcations. 115 pines, 1,505 hard-wood trees, and 5,530 bamboos were granted by permit to zamíndárs from the unreserved forests, and 54 pines to shop-keepers.

Grants of wood, &c., from the forests in Kulú, Seoráj, and Rúpi.

30. In Kulú, Seoráj, and Rúpi 2,342 pines and 5 hard-wood trees were granted to zámíndars from the reserved forests, and 47 deodár, 19,650 pines, and 161 hard-wood trees from the unreserved forests. In the Hoshiárpúr range 70,095 bamboos were cut and supplied to zamíndárs at price cost, in accordance with the agreement entered into at last Settlement. In the Harrírpúr and Dehra range 141 pines, 350 bamboos, and 61 hard-wood trees were granted to zamíndárs, and 600 bamboos to shop-keepers.

Ravi, Chinab, Jhelam, and Rawalpindi Divisions.

Forest privileges in the Rávi, Chináb, Jhelam, and Ráwalpindi Divisions.

31. Grazing and the cutting of wood for domestic and agricultural purposes are allowed in all the unreserved forests, and, when necessary, in portions of the reserved forests, in the Ravi, Chináb, Jhelam, and Ráwalpindi Divisions.

Fuel Reserve, Central and Northern Divisions.

Supplies of wood to villagers dependent on the Government rakhs in the Panjáb for such supplies.

32. It has been directed by Government that zamindárs of villages which have not a sufficient supply of wood in their common land shall be allowed to cut wood for domestic and agricultural purposes in the Government rakhs free of cost, with certain restrictions and under permits granted by a Forest Officer or a Tahsíldár. Grazing is allowed in all unclosed portions of the rakhs on payment of certain rates. Rights of way and waterway are granted wherever necessary.

Plantation Division.

Forest rights in the Plantation Division.

33. In the Gundian rakh, adjoining Changa Manga plantation, Mahant Dhian Dás continues to enjoy the privilege of grazing and felling over the entire area of this rakh. In the Dehli plantation the following rights are conceded, namely, 1st, 363 × 86 feet for burning ghát; 2nd, roads 30 feet wide from three of the city gates; 3rd, 60 × 30 feet for a bathing ghát, and a road 12 feet broad, connecting the burning and bathing ghats; 4th, right of way between the city wall and plantion; 5th, right of way along the bed of a nallah when dry. There is a claim to proprietary right in a portion of the Tilauri plantation, which has not yet been decided.

SECTION III.—PROTECTION.

Satlaj Division.

Forest offences in Bassáhir and on the Lower Satlaj.

34. No fires or surreptitious fellings have taken place in the Bassáhir demarcated forests. The Deputy Conservator has had no cases to try in his magisterial capacity. The only case of theft on the Upper Satlaj took place on the Kulú side of the river, and was sent for trial before the Tahsíldár of Plách, who sentenced the offender

to three month's imprisonment. The independent chiefs on the Satlaj appear to have accepted as final the regulations and orders issued by the Panjáb Government with regard to waif rights, as during the year no complaints on this point have been made. On the Lower Satlaj three cases of theft occurred, and the offenders were tried by the Tahsíldár of U'náh, and punished.

Bias Division.

Forest offences in the Biás Division.

35. There were 203 cases of forest offences sent up for trial in this Division; nine only of these were dismissed. Two cattle pounds only have been established on application from this Department, one at Pandain, and the other in the Naushehra plantation.

System adopted in the case of cattle trespass.

36. The system adopted by Mr. Duff in the case of cattle trespass is as follows:—All stray cattle are made over to the owners, who give a receipt for them. The Forest Ranger enters the particulars of the cattle trespass in a register, and also on the back of the receipt, which he sends to the Divisional Officer. If the owner has been in the habit of systematically grazing his cattle in a reserve, orders are issued to the Forest Ranger to pound the man's cattle the next time they are found in the forest. By degrees the people become accustomed to the prohibition without resorting to the frequent pounding of their cattle.

Benefit of closing Chil forests against cattle-grazing.

37. The advantage of closing Chíl forests against cattle is proved by the fact that in an hour's walk through a reserved forest 100 seedlings will be seen for every one in the unreserved forests.

Ravi Division.

Timber-thefts on the Rávi.

38. Thefts of Government timber in the Rávi river have been frequent during the year under report, but there have been nine convictions, and most of the offenders that were apprehended have been severely punished. In the Upper Rávi eight cases of breach of forest rules are reported to have been tried. A proposal to purchase the waif rights of the Kashmír Government on the Rávi, by an annual payment of Rs. 1,000, has been made since the close of last year.

Chinab Division.

Forest offences in the Chináb Division.

39. In the Lower Chináb Sub-Division six cases of offences were sent up for trial, in all of which convictions were obtained with sentences varying from 15 days to 6 months' imprisonment, and from Rs. 10 to Rs. 50 fine. There have been no disputes or material difficulties about waif. No forest offences are reported to have occurred in the Upper Chináb Sub-Division. A proposal to purchase the waif rights of the Kashmír Government on the Chináb river has also been made.

Jhelam and Rawalpindi Divisions.

Forest offences in the Jhelam and Ráwalpindi Divisions.

40. Twenty-two forest cases were tried; the fines imposed amounted to Rs. 168, and two offenders were imprisoned for one month and 15 days respectively. No fires have occurred in the Jhelam Division, but in the Ráwalpindi rakhs there were 10 destructive fires, and 23 of limited extent. 112 cases of breach of forest rules were tried and decided during 1873-74 in the Ráwalpindi Division. The fines amounted in all to Rs. 1,886-9-4.

Fuel Reserve, Central and Northern Divisions.

Forest protection in the Fuel Reserve Divisions.

41. In the Fuel Reserve Central Division 46 cases of forest offences were brought to trial. In 21 convictions were obtained, 3 were dismissed, and 22 were pending at the close of the year. The duties of patrolling and boundary inspection are reported to have been efficiently performed. All the Forest Rangers in this Division have given security for Rs. 300, the Foresters to the amount of six months' pay, and the Forest Watchers, with few exceptions, have also given security. This seems necessary in a large Division, where so much responsibility rests on each individual, and where there are so many opportunities of peculation. The system of reporting regularly to the Controlling Officers has been more completely carried out.

Cattle trespass.

In the Northern Fuel Reserve Division 53 forest cases were instituted of which 2 only were dismissed. 4,916 head of cattle, were pounded for cattle trespass, on which the fines amounted to Rs. 1,155. Illicit cattle-grazing in closed rakhs is a common practice, notwithstanding the number of seizures.

Plantation Division.

Protection of the plantations.

42. 1,128 head of cattle were seized in the plantations during the year under review, and fines, amounting to Rs. 303, were levied and credited in the District accounts. No forest offences are reported to have occurred, except cattle trespass. A fire burnt down half of the Rávi plantation, which is about 600 acres in extent, and although a great many trees sprung up again from the roots, the damage done was considerable. A small fire again occurred there in February 1874, doing much damage, : the neighbouring villagers are supposed to be the incendiaries. Weekly and monthly reports are submitted to the Divisional Officer by the forest subordinates in charge of the various plantations.

SECTION IV.—MANAGEMENT AND IMPROVEMENT.

Satlaj Division.

Obstacles to forest conservancy and regular management in Bassáhir.

43. In the Satlaj Division the main difficulty in the way of carrying out the provisions of any working plan is the want of labor, but the best means of supplying this want and all other subjects connected with the preparation of a regular plan for working the Satlaj forests are under the consideration of Mr. Ribbentrop, Deputy Conservator of Forests, who has been specially deputed to the Satlaj on that work.

Timber-felling in the Bassáhir forests.

44. For the reasons above mentioned the prescriptions of the plan of operations drawn up by Dr. Brandis in 1864 have not been strictly carried out, and timber operations in the Satlaj have been confined during last year chiefly to the cutting, logging, and launching of wind-fallen and dead or half-dead deodár trees.

Forest improvement.

45. The Deodár forests that were formerly more or less injured by timber speculators are reported to have nearly recovered themselves. The Sholtú and Náchár plantations are on the whole succeeding well, and are both fenced in. A bridge over the Satlaj at Narang was finished at a cost of Rs. 2,000.

Forest works.

46. A sleeper sliding trough, a mile long, was made with sleepers and other pieces, and an earthen slide, another mile long, was scooped out, in continuation of the above, at a total cost of Rs. 1,500, by which a saving of more than Rs. 4,000 was effected. A defence wall of dry masonry, 150 feet long and 15 feet high and 16 feet broad, was built, and rocks were blasted in several localities to facilitate timber operations.

Bias Division.

Forest improvements in the Bias Division.

Plantation.

47. 143 acres of forest have been surrounded by wire-fencing. The total area of plantations in this Division is 722 acres. In four acres of the Dáná Beál forest the young deodár plants, raised from broadcast sowings in December 1872, are reported to be as thick as Indian corn, and require thinning out.

Deodár sowings.

48. In the Latúrá forest, Seoráj, 67 acres, which had been worked out, were fenced with the refuse timber collected from the inside, and deodár seed was sown broadcast last autumn.

Bamboo plantation.

49. In the Dhamtal Forest, Núrpúr, 7,000 bamboo plants raised from seed received from Central India were transplanted on the northern slopes of the Dhamtal Forest, and 5,000 have been established.

Mahogany and other sowings.

50. In Núrpúr there are 362 fine healthy Mahogany plants raised from seeds. Shísham, Cork Oak, Acacia stipulata, and Acacia speciosa, were also sown in the same locality.

Buildings.

51. During the year a small substantial hut and office and two large sleeper-sheds were built at Nadaun. The Pandain bungalow was thoroughly repaired, and two rooms added to it. A hut for watchers and men employed on river work was also built at Hora. At Wazír Bholar an office and two large sleeper-sheds were built.

Roads.

52. In Kulú a road, one mile long and 12 feet broad, was made outside the Seál Beál plantation, in order that the old road which ran through the plantation might be closed. The Mani Karn and Phalga road was completed, and the Phalga slide improved.

53. In Naushehra plantation 3,240 yards of roadway, 10 feet wide, were cut, and two miles of road of the same width were made between the cart-road and the Chitril plantations.

Ravi Division.

Forest improvement.

54. In the Upper Ráví, the Dhauri Forest was cleared of all useless trees, brush-wood, and creepers, and the fence repaired. The Kalwál, Jangh Baníl, Lamú, and Suttú Forests, were treated in the same way.

55. Deodár nurseries were formed in Mangli and Bhandal; dense thickets were thinned out in the Harsar and Lamú forests, and nurseries were formed in the latter.

Plantations.

56. The Basú plantation contains about 50 acres, which have all been planted successfully. The Dhauri plantation, of 25 acres, and the Jangh Baníl plantation, of 12 acres, are also a success.

Roads.

57. Ten miles of road from the new bridge at Chanotá to Holi were finished, and 4½ miles more of road were made towards Agráli. The new road from Barmaor towards Kugti has been finished as far as Uláni, a distance of about 13 miles.

Buildings.

58. At Ulaní a small rest-house was nearly finished. The Chamba, Tísú, and Barmaor bungalows were repaired, a rest-house and godown was built at Bhandal, and a new office at Barmaor.

Nurseries at Kálátop.

Planting.

59. The sowing of deodár and Abies Smithiana at Kálátop succeeded well in two of the nurseries, but failed to a great extent in the other two, owing probably to unsuitable soil and exposure. The transplanting operations were carefully and successfully carried out. The Kálátop Forest bungalow, roads, and fences were repaired.

Nurseries and planting at Bakloh.

60. The nursuries at Bakloh are a success, but the seedlings transplanted from the nurseries into the forest have not thrived so well.

Chinab Division.

Plantation operations in the Chináb Division.

61. The blanks in the Cháo and Bamal plantations, on the Upper Chináb, were filled up with transplants, but two-thirds died; they were again restocked with somewhat better success. Nurseries were formed at Parti, Bamal, Ajog, and Cháo, and appear to have succeeded at the first two places, but to have failed at Ajog and Cháo. The Divisional Officer has been requested to concentrate planting operations at Ajog in accordance with the orders of the Government of India on last year's Forest Report.

Removal of the Laikapher obstruction.

62. The obstruction to the floating of logs at Laikapher, on the Chináb, was removed by the erection of an embankment to divert the current of the river at a total cost, exclusive of the value of timber used in it, of Rs. 5,233, of which Rs. 2,616-8-0 have to be recovered from the Mahárájah of Kashmír. The roads in the Upper Chináb Sub-Division were repaired at a cost of Rs. 1,459.

Jhelam Division.

Deodár and other sowings at Changlágalí.

63. The seeds of deodár, Pinus excelsa, and Fraxinus floribunda, and some Australian gums sown in March 1873 at Changlágalí, germinated, and the seedlings were in a healthy condition till the end of June, when the deodár and Pinus excelsa were attacked by an insect, which nipped the shoots of every seedling that came in its way.

This failure may perhaps be attributed partly to the season of sowing, and the Assistant Conservator therefore sowed the seed this year at the time it drops from the cone. The seedlings which have sprung up from these sowings are reported to be strong and healthy. 5,000 Pinus exclesa transplants were put into the ground in August last, and have done well, with very few exceptions; the leading shoots were in many cases two inches in height on 15th June. The whole of the Australian gums were killed by the winter frost, the elevation being too high. The Assistant Conservator reports that these trees thrive well at Abbottábád, and he proposes trying them on the low hills in Khánpúr.

4,000 walnut seeds were sown, and have come up well.

Another plot of 12 acres has been strongly fenced in and sown throughout with deodár seed which has germinated. In the Kamal plantation there are 5,526 young trees in a flourishing condition.

Forest Conservancy in Hazárá.

64. The Dúngágalí and Khánpúr sub-ranges have been strictly conserved. The Kágán and Siran sub-ranges were made over to this Department in June 1873, and the restrictions regarding grazing, &c., are being gradually enforced.

Sowings in old cultivated plots in the forest reserves.

Several small plots of cultivation were included in the forest reserves. Some of these were leased last year for potato cultivation; and in November, when the crop had been reaped, deodár seed was sown there. Efforts have also been made to raise deodár on the highest points of the hills in Khánpúr. Satisfactory reports have been received of these experiments made at elevations ranging from 3,629 to 4,430 feet.

Timber-catching arrangements.

65. The timber-catching arrangements on the Jhelam were efficiently carried out by Mr. Lemarchand, Assistant Conservator of Forests in charge of the Jhelam Timber Depôt. The depôt hut was repaired.

Rawalpindi Division.

Contract and permit systems for the supply of fire-wood in the Ráwalpindi District.

66. The contract system adopted for the supply of fuel to the city and cantonment of Ráwalpindi, and to the inhabitants of other large places in that District, worked well as regards forest conservancy, but there were so many complaints against it sent in to the Deputy Commissioner by the people of Ráwalpindi that it was thought advisable to set apart a tract from which the inhabitants of that city could get a sufficient supply on the permit system. The Assistant Conservator reports that the latter system worked satisfactorily.

Drain on the 2nd class rakhs.

67. The drain on the 2nd class rakhs for the building and fuel requirements of the people is immense all over the Ráwalpindi District, besides the demands of the city and cantonment, and of the Commissariat and Public Works Departments. Pains have been taken to economize the supply from the rakhs as much as possible.

Fuel Reserve, Central Division.

Data for rakh working plans.

68. Notes of the information and detail required for the preparation of simple plans for the working and treatment of the rakhs in this Division have been partially collected.

Improvement of selected rakhs by sowings.

69. Rs. 810-2-0 were spent on sowings in 1,460 acres of rakh land in the Lahore District, and the sowings of Zizyphús and Prosopis spicigera germinated freely, but the permanent results are not yet known. The Sissú sowings failed entirely.

70. 230 acres in the Montgomery District were operated on in a similar manner at a cost of Rs. 154-12-0 with a fair amount of success.

Forest Watchers' huts.

71. Six watchers' huts have been erected, three in Montgomery, two in Amritsar, and one in the Lahore District.

Fires.

72. Fires of small extent occurred in this Division, but did little damage.

Rakhs closed against grazing.

73. Nineteen blocks were closed to grazing; the total area of the closed blocks amounted to 49,294 acres. The reproduction in these blocks has been very good. In the Muzaffargarh rakhs the natural reproduction is very satisfactory.

Improvement of rakhs on a large scale recommended.

74. The Divisional Officer, Mr. Browne, recommends that instead of of taking up cultivated land for plantations, thereby causing great dissatisfaction to the people, an attempt on a large scale should be made to improve the rakhs in the proximity of the different centres of demand, and especially on the banks of the rivers. Where rakhs of sufficient extent and near to the market exist, and are improvable at moderate cost, no doubt this is the best plan.

Fuel Reserve, Northern Division.

Valuation surveys in the rakhs of the Bherah Tahsíl.

75. Valuation surveys were made in the Fuel Reserve tracts in the Bherah Tahsíl to acertain the quantity of fire-wood produced per acre. The results have not been reported, but this information has been called for.

Thinning operations.

76. The thickets of Shísham in the belás of Píra Ghaib and Seila were thinned, and all badly shaped, and broken trees were cut out. Considerable damage has been done to young trees by an insect. The willows, planted on the sloping banks of the river, have made good progress.

Sowings.

77. The sowings in rakhs Dhúl and Mari and Bachchar, of 1872-73, have all since failed; the sowings in plough lines were a total failure, and the seedlings raised in square plots nearly all died in the hot months, after reaching about two feet in height. The transplanting of strong plants from a nursery close at hand appears to be the mode of stocking these rakhs most likely to succeed permanently. Sowings in rakh Girát succeeded better, but there is very little now left even there.

Planting.

78. The planting done in Píra Ghaib in 1872 has succeeded admirably, but the similar work done in the spring of this year has to a great extent failed. During August 1873 a little planting was done in Belá Píra Ghaib, and at the end of the official year the results were satisfactory.

Plantation Division.

Plantation operations at Changa Manga.

79. The spring transplanting of 1872-73 at Changa Manga was almost a complete success. The water-supply arrived in season, the plants struck at once, and have since grown rapidly.

Filling up blanks.

The filling up of blanks in 1873-74 has been fairly successful.

Sowings.

80. From the 1st of April to 15th July 1873, 966 acres of new land were sown with Sissú, Jand, Phulái, and Ber; the early sowings germinated well, and are a complete success, but the latter did not prosper so well, and it was necessary to partly resow 100 acres, which succeeded. Blanks to the extent of 378 acres were replenished successfully. In land unsuitable for other trees Farásh cuttings were planted, and a large proportion is growing vigorously.

Regularity of the water-supply.

81. The water-supply throughout the season was more regular than in any previous year, and to it the success of planting and sowing is reported to have been mainly due; but the

results are at the same time very creditable to the Divisional Officer, Mr. Minniken, and his Assistant at Changa Manga, Mr. Calthrop. The Canal Officer, Mr. Phelan, deserves our best thanks for the way in which he maintained the supply, and for his endeavours to increase it, at seasons when it was most wanted. The younger portions of the plantation were frequently watered.

Weeding and silt clearance.

82. All the new sowings were weeded, and the long reeds, grass, and silt were cleared out of the water-courses.

Plantation roads and irrigation works.

83. 212 miles of plantation roads were cleared and partially levelled, and numerous bridges were made or repaired. On the right bank of the canal a "rájbuha" and "mogah" were completed; 2,195,408 cubic feet of trenching were done.

Eucalyptus sowings and willow cuttings.

84. 590 Eucalyptus plants were raised from seed in pots and planted out, but half perished; the rest are healthy. 20,000 willow cuttings were planted out, and do well.

Pruning.

85. Compound and roadside trees were pruned under the supervision of the Plantation Officer. Several hundred Eucalyptus trees were also pruned and have since grown vigorously.

Thinning operations in the Changa Manga plantation.

86. During the first quarter 107 acres of trees of four years old and 318 acres of three years old, were thinned to five feet apart. The thinnings were carted outside the plantation, and all the saleable wood was stacked. The beneficial effect of thinning in the Changa Manga plantation is at once noticeable in the increased girth and erect growth of the trees in the thinned compartments when compared with the unthinned portions.

Sowings in the Rávi plantation.

87. In the Rávi plantation 186 acres were replenished in July and August with Jhand sowings, which germinated well. 184 acres more were subsequently sown, but the sowings failed from drought and fire. A small tool and seed godown was built on this plantation.

Khánwah plantation.

88. In the Khánwah plantation 235 acres were sown with Jhand at five feet apart, but the success was only partial owing to scarcity of water.

Sháhdhera-*cum*-Jugián Plantation.

89. In the Sháhdehra-*cum*-Jugián plantation 24,731 Sissú and Phulái transplants were put out in the rains, and show a success of 90 per cent. After the rains 30 acres were sown with Kíkar and Phulái at five feet apart, and germinated well. 9,211 transplants were planted out in February in holes two feet deep, and will probably succeed. 8,780 Farásh cuttings were planted in low places, 4,000 died, but the remainder are doing well. The trees in the Jugián plantation are looking remarkably healthy, and are increasing in size rapidly. Three roads were made, dividing the plantation into compartments.

Jhoke-*cum* Sádhánwálí plantation.

90. In the Jhoke-*cum* Sádhánwálí plantation 30 acres were resown with "Phulái." 800 acres were sown with Kíkar, Bér, and Jhand, which germinated well, but 100 acres were killed by successive floods, and the Kíkar plants were killed by frost during the winter, so that there is very little success to report regarding these sowings. 80,000 Sissú transplants were put out in the rains with fair success, and 250,000 were planted in the spring of 1874. 20,000 willow cuttings were planted but failed.

Roads and lines were made dividing the plantation into compartments. A nursery of seven acres was prepared, and three wells were dug to water it.

Nág plantation.

91. In the Nág plantation 2,000 willow cuttings were planted with success. Blanks in 50 acres were replenished with Jhand. 40 acres were sown but failed, owing probably to the land being bad and ill-drained. 1,987 Tún transplants were planted out, but died down; they have since thrown up fresh shoots from the roots.

Phillour plantation.

92. In the Phillour plantation 14,160 Mulberry and Sissú plants were planted in blanks, and have succeeded so far. A small house for the Forest Watchers was built in the Phillour and also in the Lúdiánah plantations.

Jagádhri plantation.

93. In the Jagádhri plantation 155 acres were sown with Kíkar, Ber, and Sissú, but the result is not very satisfactory. 20,200 transplants were sent to Jagádhri from Changa Manga, and planted out.

Dehli plantation.

94. In the Dehli plantation 75 acres of Kíkar sowings were drowned by inundation. 13,000 Tamarix cuttings were planted, but half were killed in the same manner. 550 Jáman cuttings were planted along the plantation roads, and succeeded well. 12,000 transplants were planted in the Chandráwal compartment from nurseries, with 80 per cent. success. 3,000 Kíkar plants were planted out in August with earth attached to their roots, and 60 plants only died. 41,000 Sissú transplants from Changa Manga were planted out, and sprouted. 8,125 Kíkar transplants did not succeed well, and a large proportion died. A nursery of an acre was prepared for sowing Sissú, and another for Jáman and Ním cultivation.

Tilauri plantation.

95. In the Tilauri plantation 20 acres were sown with Kíkar on little mounds with complete success; 60 acres were sown by a contracter in plough lines, but the seedlings were killed by frost during the winter. 1,545 Kíkar transplants, 2 feet high, were transplanted with earth, and succeeded well; 77 plants only died. 10,500 transplants from Changa Manga were planted, and have thrown out shoots.

Kathála nursery.

Wazírábád plantation.

96. At Kathálá a nursery of 2 acres was prepared in May, and subsequently watered and weeded. In the Wazírábád plantation 28,900 Sissú plants were planted out in 17 acres during February 1874, and are likely to succeed.

Kikránwáli plantation.

In the Kikránwáli plantation 80 acres were sown in July with Kíkar, but the seedlings were destroyed by inundation. The same area was resown, but the plants were killed by frost during the winter.

Floods.

97. There were no floods of any consequence either in the Satlaj river or in the Upper Bías, and very few logs could be brought down these rivers. There were two freshes in the Párbatti, but the chief floods in the Biás Division occurred in the Kángra District. In the Ráví river four of the floods were confined principally to the lower river, and two occurred in the upper part of the river. There were four floods in the Chínáb river, in one of which 25 rafts were carried away. Twenty-three floods took place on the Jhelam, causing an average rise of about 7 feet, and lasting on an average about 24 hours, but no damage was done to timber in depôts. Some rafts in transit were broken up, but the logs were afterwards collected.

SECTION V.—YIELD AND WORKING OF THE FORESTS.

Satlaj Division.

Timber operations in the Satlaj forests.

98. The number of trees felled in the Satlaj forests was 186; number of logs remaining in the forests from previous year 784; number of logs cut out of the 186 trees felled, 1,496; number of logs cut from wind-fallen trees 9,595; total 11,875 logs. Of these 639 were sawn into sleepers, and 10,530 logs were launched, leaving 706 logs in the forests.

Sleeper operations.

99. 17,894 narrow guage and 3,717 broad guage sleepers were sawn, making a total of 21,611 sleepers; of these 12,247 sleepers were launched; 4,000 were used in making a sleeper slide; 3,717 sleepers, 11′ × 10″ × 5,″ remain in the forest; and 1,647 short sleepers were left as being unfit for any purpose but repairs.

Percentage of logs launched & received at the Phillour depôt.

100. During the year 2,801 logs were received at Phillour Timber Sale depôt, of which 783 were logs launched in 1872-73, and 2,016 logs from the launchings of 1873-74, being 11 per cent. of the total number of logs launched in 1872-73, and 18 per cent. of those launched in 1873-74; the logs averaged about 16 cubic feet.

Timber sales at Phillour.

101. During the year 768 sleepers were sold to the Indus Valley State Railway, and 218 logs to the Public Works Department. The demand for timber on the Satlaj is reported to have been small throughout the year.

Stock in hand at Kalesar depôt.

102. Most of the stock of wood at the Kalesar depôt, consisting of Sál poles and fire-wood, is reported to be rotten from exposure to the weather during the last three years, and will have to be struck off the books as useless and unsaleable. This wood was necessarily cut when clearing demarcation and export roads in the Kalesar Sál forest. No additions are now made to the depôt stock, but wood is cut only as required.

Bias Division.

Timber operations in the Biás forests.

103. In the Biás forests 902 deodár trees were felled, of which 40 trees were sawn into logs and launched during the past year, and 100 trees were felled and logged for launching in 1874-75. The remaining 762 trees were sawn into 11,460 scantlings, 13′ × 9″ × 5,″ and 4,370 sleepers 6″ × 8¼″ × 4¼″; of these trees 545 were felled in the Bláj Dhár forest, and 217 in the Salánú forest.

Timber-supply for public purposes from the forests in Kulú, Seoráj, Rúpí, Núrpúr, Hamírpúr, and Derah.

104. For District works 173 deodár, 1,160 other pines, and 21 hard wood trees, were felled in Kulú, Seoráj, and Rúpí. 125 Chíl trees were felled for the Public Works Department in the Núrpúr forests, and 45 Chíl trees, 7 hard wood, and 700 bamboos, for District works; 90 Chíl trees and 2 of hard wood were felled in the Hamírpúr and Derah range for the Public Works Department, and 63 Chíl and 10 hard wood trees for District works.

Timber launched and caught.

105 692 deodár logs were launched during the working season of 1873-74. On the 1st April 1873 there were 3,444 logs in transit between the upper launches and the catching depôts; and during the past year 2,121 deodár logs were received in depôts. The percentage of logs launched in the different years received in depôts during 1873-74 were as follows:—Of 1865 fellings, 3 logs; 1866, 44 logs; 1867, 30 logs; 1868, 152 logs; 1869, 608 logs, or 14 per cent.; 1870, 403 logs, or 26 per cent.; 1871, 206, or 26 per cent.; 1872, 156, or 20 per cent.; 1873, 1 log; total 1,603 logs. The difference between the total receipts and the number of logs branded with

the year of felling is 518, which consisted of re-marked timber and logs from which the numbers had been effaced.

Sleepers launched and received.

106. 35,000 Government sawn sleepers were launched after the rains; also 6,274 Mandí State sleepers, making a total of 41,274 sleepers launched. Of these 40,360 were rafted down to Wazír Bholar, 914 are missing, but most of them are likely to be recovered: the short 6-feet sleepers disappear very easily even in a comparatively small stream.

Timber sales.

107. 518 logs, containing 17,701 cubic feet and 42,875 sleepers, were sold to the Indus Valley State Railway; 59 logs to the Sindh, Panjáb, and Dehli Railway; 504 logs to the Public Works Department, and 2,202 logs to other purchasers.

Merchants' timber inspected and passed.

108. 414 rafts belonging to merchants were inspected and passed. These contained 6,923 Chíl scantlings and balís, 21,473 hard wood scantlings and balís, and 72,818 bamboos.

Proportion of sleepers accepted and rejected.

109. Of 25,840 sleepers offered to the Indus Valley State Railway, 24,363 were selected as 1st class, 1,448 as 2nd class, and only 29 were rejected. This shows that scantlings can be transported hundreds of miles by water without receiving any material injury if due care is taken, as has been done in the Biás Division. The Indus Valley Railway authorities prefer depôt-sawn to forest-sawn sleepers; but the Engineers of the Panjáb Northern State Railway are of opinion that forest-sawn sleepers are the better of the two, and it is certainly better for the forests to supply deodár sleepers instead of logs as long as we have forests of Deodar so situated as to render it impossible to work out timber in the form of logs.

Advantages of supplying sleepers instead of logs.

Ravi Division.

Yield of the Kálátop forest.

110. 3,258 cubic feet of deodár and 1,552 cubic feet of Abies Smithiana were cut in the Kálátop forest. Of these 2,132 cubic feet were sold, and 2,678 cubic feet remained in stock. Abies Smithiana is extensively used at Dalhousie.

Chíl timber fellings in the Bakloh forest.

111. 278 Pinus longifolia trees were felled on permit in the Bakloh forest at Rs. 4 a tree, but in future a limited number only will be cut, if necessary, to meet Government requirements, and they will be sold at so much a cubic foot instead of on payment of Rs. 4 per tree. Chíl timber must, as deodár becomes scarce, be extensively used for building purposes, and where kept from the influence of damp, it lasts for years.

Progress made in logging and launching in the Upper Rávi forests.

112. In the Upper Rávi forests no trees were felled, but all old logs, with the exception of between 3,000 or 4,000, were cleared out of the forests. The following statement shows the progress made in logging and launching :—

Logs reported to be in the forest on the 1st of April 1873 ...	3,150
Old logs counted during the year	7,695
Logs cut from wind-fallen trees during the year	434
Total number of logs ...	11,279
Number of logs launched during the year	6,920
Number of logs remaining in the forests on 1st April 1874 ...	4,359

The logs average about 25 cubic feet, and contain altogether about 173,000 cubic feet of timber.

Sleeper-sawing. No breakages of logs launched.

During the year 300 old deodár logs were converted into 12,391 narrow gauge sleepers. There were no breakages in launching, as nearly all the logs were slidden down wooded slopes and across old cultivated terraces.

Little rafting done on the Rávi.

113. Very little timber reached the Lahore depôt during the year 1873-74. The old stock was sold off at favorable rates, and the depôt cleared.

Chinab Division.

Timber-fellings and launchings in the Chináb leased forests.

114. In the Chináb forests leased from the Chamba State, 952 dead trees were felled, 21,683 logs were cut, containing 287,941 cubic feet, and the whole were launched. The breakages are believed to have been about 5 per cent.

Waif and unmarked timber.

115. 390 waif logs were caught, and 214 unmarked Government logs were brought into depôts.

Timber sales.

116. 20,940 logs, containing 376,620 cubic feet, were sold during the year at the Wazírábád and Multán timber depôts. In March all the inferior pine timber was sold off.

Percentage of timber launched received and average length and contents of logs.

117. The percentage of logs launched in former years received during the year 1873-74 was as follows :—Of 1862 launchings, 2½ per cent. ; 1863, 1 per cent. ; 1864, ½ per cent. ; 1865, ½ per cent. ; 1866, ⅓ per cent. ; 1869, 9⅓ per cent. ; 1870, 17 per cent. ; 1871, 68½ per cent., and the total receipts were 8,677 logs. The prevailing lengths are 7 to 12 feet, and average contents 13 cubic feet.

Jhelam Division.

Fellings in the Hazárá forests.

118. Within the past year the fellings in the reserved forests of Hazára, have been restricted as much as possible to the quantity required to meet the wants of public departments, and very few trees have been sold to private individuals. The following is a list of the trees felled during the year under review, showing the amount of seignorage paid to the credit of Government and to the land-owners :—

	Rs.	A.	P.		Rs.	A.	P.
229 Pinus excelsa trees ...	1,368	0	0	230 Prunus Padus ...	460	0	0
79 Quercus dilatata ...	616	0	0	159 Quercus incana ...	317	0	0
20 Taxus baccata ...	80	0	0	11 Wild olive ...	11	0	0
71 Pavia Indica ...	142	0	0	3 Juglans regia ...	15	0	0
39 Celtis Caucasica ...	39	0	0	2 Elm ...	6	0	0
79 Pinus longifolia ...	289	8	0	2 Acer cultratum ...	4	0	0
112 Picea Webbiana ...	224	0	0	1 Ficus Roxburghii	0	8	0
5 Populus ciliata ...	15	0	0	20 Oak species ...	5	0	0
				4 Cotoneaster baullaris	1	0	0
Total No. of trees 1,066.				Total ...	3,593	0	0

Timber operations in Kházán.

119. In the Kházán forests there remained from last year 916 trees felled but not logged, 10,790 deodár logs, and 1,928 logs of Pinus excelsa ; of these 1,853 deodár logs and 1,697 Pinus excelsa logs have been launched, and 2,810 logs were brought down to the river bank ready for launching, which was done in April 1874.

Timber arrivals and logs remaining in the forests.

3,563 deodár and 2,169 Pinus excelsa logs were received in depôts, and 8,937 deodár and 8,584 Pinus excelsa logs remained in the forests.

Fuel Reserve, Central Division.

Fire-wood sales.

120. 994,471 cubic feet of stacked fire-wood were sold to Melá Rám, Railway Fuel Contractor, 651,000 cubic feet to the Commissariat Department, 13,063 cubic feet to the Panjáb Northern State Railway, 5,760 cubic feet to the Executive Engineer Amritsar and Lahore Road, and 80,000 cubic feet to Díná Náth.

Charcoal sold.

1,698 maunds of charcoal were supplied to the Executive Engineer Amritsar and Lahore Road, and 510 maunds of Chíl charcoal to the Sindh, Panjáb, and Dehli Railway.

Prospect of an early settlement of Sikandar Khán's case.

121. The Chíl timber brought down by Contractor Sikandar Khán has been mostly utilized for conversion into charcoal. Sikandar Khán's case is in the hands of the Government Advocate, and is likely to be soon settled by arbitration.

Charcoal contract with the Sindh, Panjáb, and Delhi Railway.

122. The charcoal contract with the Sindh, Panjáb, and Dehli Railway commenced on the 1st Februray 1874, and provides for a monthly supply of 1,000 maunds of Chíl charcoal and 2,000 maunds prepared from any of the following hard woods :—Acacia Arabica, Acacia modesta, Capparis Aphylla, Dalbergia Sissú Zizyphus jujuba, and Prosopis spicigera. It is stipulated in the contract that the Chíl charcoal demand can be increased by 500 maunds monthly, and the hard wood charcoal by 1,500 maunds, after giving two months' notice.

Permits to remove kankar.

123. Rakh land containing kankar is leased at Rs. 16 per acre for three months, the lessees removing as much as they like during the period of their contract, and in all cases they level the land when the excavation is completed.

Sale of múnj and sajji.

124. Múnj is sold for what it will fetch in the markets of the different parganahs; sajji or soda obtained from waste lands yields a revenue in the Multán District.

Grazing revenue.

125. In the Lahore, Amritsar, and Gujranwála Districts there has been an increase in the grazing revenue. In the Montgomery District there has been a slight decrease. The receipts from grazing in the rakhs of the Multán and Muzaffargarh Districts transferred to this Department have not been credited to this Department, pending a reply to a reference on the subject made to the Financial Commissioner.

Proportion of grazing revenue in certain Districts creditable to this Department.

126. The grazing leases in the Districts of Montgomery, Multán, Muzaffargarh, and Derah Ghází Khán, are sold by the Deputy Commissioners, a share of the proceeds in proportion to the area transferred being creditable to this Department.

Fuel Reserve, Northern Division.

Fuel-cuttings in the Northern Fuel Reserves.

127. Very little fuel was cut from the rakhs in the Northern Fuel Reserve Division during 1873-74. The largest quantity taken was 7,265 maunds from rakh Parerá for the use of the Mayo Mines tramway, but this was dry wood only; 1,721 maunds of wood, chiefly Olive, were sold from rakh Drengun for making combs, &c.

128. There are about 3,000 maunds in rakh Soháwá still on hand, cut and stacked, and some 5,000 maunds in rakhs Bahowál, Músa, and Daffar, of the Bherah Tahsíl, which will probably be taken by Lieutenant DeWolski and others.

Fuel stacked in rakhs.

129. The proceeds of fuel sales have fallen far short of the estimate, as purchasers can get fire-wood cheaper from zamíndárs who denude their village woodlands, and convert the wood into money without any thought about future supplies.

Cause of smaller receipts from fuel sales.

130. Good prices were obtained for the leases of minor forest produce in the rakhs of the Jhelam and Sháhpúr Districts, and no difficulty is experienced in realizing the amounts; but the rakh leases in the Gujrát District do not sell readily, and are difficult to manage. There are also a number of outstandings of former years, which are extremely doubtful of realization.

Minor forest produce leases.

131. In the Sháhpúr Salt Range the zamíndárs are reported to be very lawless, and it is said to be impossible to hold an auction of rakh leases there, as it would probably end in a fight between the successful and unsuccessful bidders. In some of these rakhs the grazing leases are given out on tenders, and the enumeration of cattle is carried out in the remainder, which is found to satisfy all parties.

Difficulties reported to be in the way of auction sales in the Sháhpúr Salt Range.

132. Five rakhs have been closed against grazing, but the grass has been sold on these rakhs for cutting and removal.

Rakhs closed against grazing.

133. The saltpetre lessees have hitherto obtained fuel free, but it was found that about 24,000 maunds of fuel were burnt annually in this business, for which Rs. 260 at most were paid. The license-holders have now to buy wood in the ordinary way, which will increase the revenue and tend to the economy of fuel.

Saltpetre leases.

Plantation Division.

134. The greater portion of the thinnings of the Changa Manga Plantation was unsaleable, but 3,058 maunds were sold for Rs. 305-12-9.

Sale of thinnings at Changa Manga.

135. The grazing of rakhs Sháhpúr and Moujokí was not leased, as the offers were too low, and the result of Departmental management was a larger revenue than in previous years.

Grazing revenue managment in the Plantation Division.

136. The grazing in rakh Sarangwál was leased to the Military Department; that of Jhoke and the new alluvion of Sháhdara were sold to contractors. The grass in all the other plantations was sold by auction, and realized very fair prices.

137. 5,40,510 cubic feet of earth-work were executed by zamíndárs in lieu of land-rent, equivalent to Rs. 1,038-2-6. The produce of cotton cultivation realized Rs. 308-10-1, and the soil was much improved by being cultivated.

Earth-work done in lieu of land-rent.

Proceeds of cotton cultivation.

138. At Jhoke and Sádhánwálí Rs. 1,441-8-11 were realized for land leased for cultivation, and at the same time part of the land was planted with Sissú and other trees at 10 feet apart.

Rent for land cultivated and planted.

CHAPTER II—GENERAL.

FINANCIAL RESULTS.

Receipts and expenditure.

139. The annual summary of forest revenue and expenditure during the year under review is given in Form 21 appended to this Report, and shows a surplus of Rs. 1,35,377.

Increase of revenue.

140. The proceeds of timber sales at depôts exceed those of the previous year by more than a lakh, while the realizations from sale of wood removed by purchasers have decreased by about Rs. 30,000. There has been an increase of grazing dues and a falling-off in miscellaneous revenue.

Decrease of expenditure.

141. It is satisfactory that there has been a large diminution in the expenditure during 1873-74 as compared with the previous year; and that the charges under every Budget head have decreased, except under "A IV, Rent of leased forests," to which have been debited Rs. 7,760 paid as seignorage for trees felled in Hazárá during 1869, 1870, 1871, and 1872, and Rs. 17,234 paid to the Maháráj ah of Kashmír on account of an old waif timber account, and under "A VII."

Curtailment of timber expenses.

142. The largest decrease is under "A I, Timber expenses," which amounted to Rs. 2,07,868 as compared with Rs. 3,94,778 in the previous year, showing an apparent saving of Rs. 1,86,910. This is partly due to the settlement of some outstanding timber accounts in 1872-73, but some credit may also be taken for economy, as the quantity of timber brought into depôts during the past year compares well with the timber receipts of 1872-73. The figures are—

For 1872-73 ...	...	29,726	logs and	32,015	sleepers.
„ 1873-74 ...	...	30,742	„ „	81,468	„

Savings under "B. Establishments."

143. The total expenditure under the Budget Major head, "B. Establishments," shows a decrease of over Rs. 8,000.

Outstandings.

144. Statement No. 23 is divided into three parts—

A. Outstandings under "Advances recoverable";
B. Outstandings on account of advances charged to "Conservancy and Working;" and
C. Outstandings on account of sales.

The principal debt under the first head is against Sikandar Khán, whose case is now under arbitration, and will, it is hoped, be settled very soon. Under Conservancy and Working the largest outstandings have since been mostly adjusted, and the greater part of the other outstandings are under adjustment.

Net result of the year's transactions.

145. Form 28 shows the value of the year's transactions to be Rs. 8,02,342, and the cost to amount to Rs. 5,88,668, leaving a surplus of Rs. 2,13,674; but owing to the great diminution of timber stock at the depôts and the non-realization of the estimated value of the large quantity of timber sold, the net result is a deficit of Rs. 6,854.

Financial profit.

146. There are, however, Rs. 8,357 creditable by the District authorities to this Department on account of grazing dues derived from the rakhs in the Muzaffargarh District under the charge of this Department, and several thousand rupees collected by the Deputy Commissioner Multán from a similar source, none of which sums have been

taken credit for. There are also large areas of rakh land, the grass produce of which has been granted free of charge to the Military Department. If these items be taken into consideration, it will be observed that there has been a financial profit on the transactions of this Department during 1873-74.

GENERAL REMARKS.

147. Dr. Stewart, the late Conservator of Forests in this Province, died at Dalhousie in July 1873. Mr. Ribbentrop, Deputy Conservator of Forests, held charge of the Conservator's office from the 6th of June to the 13th December 1873, and the undersigned has held charge since that date.

148. In the Satlaj Division the only change of officers was the transfer of Mr. Laird, Assistant Conservator of Forests, to the Bombay Presidency, and the appointment of Mr. Fendall, Sub-Assistant Conservator of Forests, to the charge of the Lower Satlaj Sub-Division.

149. The Deputy Conservator Biás Division reports that he has had every reason to be well satisfied with the manner in which all his subordinates have performed their duties, and he regrets losing the services of Mr. Lister, a very promising officer, who has recently resigned the service.

150. The death of Mr. Murray, Deputy Conservator Lower Rávi Division, on the 29th September 1873, has to be recorded, and the appointment of Mr. Allan, Assistant Conservator of Forests, to the charge of that Division, and subsequently to the control of the whole work on the Rávi when the Upper and Lower Divisions were amalgamated. Mr. Mackay, Sub-Assistant Conservator Upper Rávi, is a hard-working officer, and well deserving of promotion.

151. In the Chináb Division several changes have taken place. Mr. Hillier, Assistant Conservator, who was in charge of the Upper Chináb Division, obtained two years' leave on medical certificate from the 16th March 1874, and Mr. Watters, Assistant Conservator Lower Chináb Division, was appointed to the charge of the whole Division in which the Upper and Lower charges were united. Mr. Condon, Sub-Assistant Conservator, was transferred from this Division to Bengal, and Mr. Forrest, Assistant Conservator of Forests, joined from Bengal, and was appointed to the charge of the Lower Chináb Sub-Division.

152. The Assistant Conservator in charge of the Jhelam and Ráwalpindi Divisions reports very favorably of the tact and energy displayed by Mr. Lemarchand, Assistant Conservator in charge of the Jhelam Depôt. The temporary loss of the services of Mr. Elliott, Assistant Conservator, who was in charge of the Ráwalpindi Division, but had to go home on sick leave, is much regretted.

153. The Deputy Conservator Fuel Reserve, Central Division, reports that Mr. Fendall and Mr. Stewart, Sub-Assistant Conservators, did their work well. Captain Atkinson, Sub-Assistant Conservator in charge of the Multán, Muzaffargarh, and Derah Ghází Khán rakhs, has worked with zeal, energy, and ability, and it is hoped that the claims of this officer to promotion to Assistant Conservator may not be forgotten. Mr. Vincent, Assistant Conservator, joined this Division in December 1873, from England, and promises to be a very useful Forest Officer.

154. The Assistant Conservator Fuel Reserve Northern Division reports that Mr. Monteath, Forest Ranger, has rendered him much assistance.

155. The charge of the Plantation Division has been held by Mr. Minniken since the 8th of August 1873. The Divisional Officer reports favorably of the zeal end energy shown by Mr. Calthrop, who was in charge of the Changa Manga plantation throughout the year.

156. To the Forest Divisional Officers in this province, and to Mr. Wild, Assistant Conservator in charge of the Forest Office of Accounts, the thanks of the undersigned are due for their cordial co-operation and united efforts to carry on the work of this Department successfully and with economy.

LAHORE,
8th September 1874.

W. STENHOUSE, CAPTAIN,
Offg. Conservator of Forests, Panjáb.

No. 11.

FOREST DEPARTMENT, PANJAB.

Account of trees felled, logged, and Timber launched in the different River Forests during the year 1873-74.

DIVISIONS.	On hand at the commencement of the year.	Logged, or obtained as logs ready made.	Total.	Launched.	Remained in the forests.	Received in Depôts.	REMARKS.
Satlaj ... Logs	784	11,091	11,875	10,530	(*b*) 706	(*a*)2,801	(*a*). Includes 2,016 of this year's launchings. (*b*). 639 logs were sawn into sleepers.
Satlaj ... Sleepers	17,894	3,717	21,611	12,247	(*c*) 5,364	...	(*c*). 4,000 sleepers were used in making a slide. 1,647 of these are unfit for any purpose but repairs.
Biás	(*d*) 3,244	593	3,837	692	539	(*e*) 2,121	(*d*). This contains 2,606 logs counted in transit, included by mistake in last year's figures. (*e*). These are all previous years launchings.
Ráví	3,150	8,129	11,279	6,920	4,359	...	
Chináb	...	21,683	21,683	21,683	...	8,677	
Jhelam	3,552	(*f*) 9,166	12,718	3,550	9,168	5,732	916 unlogged trees remain in the forests. (*f*). These logs were remaining in the forests in 1872-73, but were not reported.

A. E. WILD, *Assistant Conservator,*

For Offg. Conservator of Forests, Panjáb.

No. 20.

Forest Department, Panjab.

Conservator's Abstract Book of Summary of Expenditure for 1873-74.

Names of Budget Heads.	EXPENDITURE IN CONSERVANCY AND WORKING.																																			
	April.			May.			June.			July.			August.			September.			October.			November.			December.			January.			February.			March.			Total.		
EXPENDITURE.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.
A. Conservancy and Working.																																				
I.—Timber Expenses ...	18,675	5	11	17,362	14	2	7,921	8	5	16,730	15	11	25,566	3	0	30,211	15	8	14,658	15	2	13,360	11	0	13,203	13	7	10,963	1	8	14,660	12	4	24,551	6	4	2,07,867	11	2
II.—Purchase of stock ...	83	1	3	258	14	2	592	13	6	923	8	9	23	2	0	110	12	0	931	10	9	202	4	10	151	14	3	325	7	11	208	11	0	823	4	4	4,635	8	9
III.—Feed and keep of cattle	53	10	0	65	8	7	57	8	8	57	15	10	97	7	0	60	6	0	166	0	8	70	7	1	...	...	...	...	...	...	12	0	0	...	...	...	640	15	10
IV.—Rent of leased forests ...	10,500	0	0	...	...	...	...	...	...	21,013	13	8	2,898	4	0	...	...	...	10,700	0	0	...	...	...	...	...	...	...	...	...	...	...	6,122	0	0	51,234	1	8
V.—Charges in collecting revenue ...	15	0	0	16	8	9	15	0	0	...	...	...	30	0	0	15	0	0	27	8	0	27	0	0	...	...	...	38	0	0	23	0	0	51	9	6	258	10	3
VI.—Plantation ...	1,034	7	2	1,255	0	1	4,185	8	11	4,368	5	9	7,247	11	9	3,507	11	9	4,174	5	2	1,879	7	3	3,769	12	9	2,294	2	11	15,733	11	7	8,657	9	3	58,107	14	4
VII.—Forest work ...	156	1	0	...	...	...	45	2	6	0	7	6	242	7	6	...	...	...	413	0	0	19	12	6	189	3	0	107	3	0	83	9	6	121	15	9	1,378	14	3
VIII.—Forest surveys ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
IX.—Experiments on timber ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
X.—Communications and Buildings ...	1,311	12	10	1,743	10	2	2,634	3	5	2,541	9	11	6,334	7	11	1,735	13	9	1,338	0	11	8,544	11	0	696	1	6	544	8	10	360	14	6	2,547	2	6	30,333	1	3
Total ...	31,829	6	2	20,702	7	11	15,451	13	5	45,636	13	4	42,439	11	2	35,641	11	2	32,409	8	8	24,104	5	8	18,010	13	1	14,272	8	4	31,082	10	11	42,874	15	8	3,54,456	13	6
B. Establishment.																																				
I.—*Salaries.*																																				
1. Pay of Conservator ...	...	...	...	2,400	0	0	...	...	...	2,036	12	5	...	...	...	1,159	10	10	950	0	0	1,200	0	0	950	0	0	1,062	14	5	1,000	0	0	1,000	0	0	11,759	5	8
2. Pay of Executive Officers ...	7,405	14	6	7,950	0	0	6,300	0	0	11,801	9	9	9,575	0	0	6,325	0	0	6,135	3	4	7,595	11	6	7,400	0	0	6,279	13	6	5,652	3	6	9,328	7	10	91,748	15	11
3. Office Establishment ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
a. Direction ...	549	8	3	560	0	0	560	0	0	560	0	0	560	0	0	560	0	0	560	0	0	560	0	0	560	0	0	560	0	0	560	0	0	560	0	0	6,709	8	3
b. Executive ...	670	0	0	815	0	0	700	0	0	1,120	12	9	940	0	0	795	0	0	860	0	0	987	0	7	790	0	0	1,005	0	0	627	13	8	1,742	0	0	11,052	11	0
4. Forest Conservancy and Establishment ...	4,475	0	0	5,070	2	8	4,260	6	1	5,698	9	0	5,832	0	3	5,083	0	0	5,583	14	5	5,875	4	8	5,351	4	0	6,318	12	0	4,417	0	0	9,114	4	5	67,079	9	6
5. Timber Depôt and Work Establishment ...																																				
6. Deputation and special allowances ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
II.—*Travelling Allowances.*																																				
1. Conservator ...	...	...	...	418	0	0	...	...	...	...	...	...	...	...	...	193	4	0	...	...	...	...	...	...	932	12	8	...	...	...	...	...	...	...	...	...	1,544	0	8
2. Executive Officers ...	2,552	8	6	3,067	6	8	2,321	11	1	3,540	8	10	3,531	13	4	1,508	11	10	1,642	9	9	3,114	8	7	2,937	4	4	2,062	9	10	4,624	15	10	3,292	4	8	34,197	1	3
3. Depôt Forest Establishment	434	10	3	701	10	3	542	5	7	528	10	9	658	13	5	650	12	4	462	5	8	747	9	1	435	14	4	487	0	10	546	15	8	722	5	3	6,919	1	5
III.—*Contingencies.*																																				
1. Stationery ...	109	6	1	180	4	3	616	5	9	105	2	10	343	4	7	130	9	8	197	7	1	248	15	5	363	5	1	116	10	5	34	9	0	175	13	9	2,621	13	11
2. Office rent, carriage of records	182	14	11	419	2	0	149	7	9	160	5	4	185	0	6	232	8	2	402	13	0	736	13	3	526	14	0	328	15	5	102	6	6	342	15	5	3,770	4	3
3. Pay of Police guard ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
4. Sundries ...	252	7	5	386	5	1	303	5	5	600	12	5	316	6	2	177	0	1	247	6	6	585	0	10	272	13	7	149	11	3	128	0	3	362	2	6	3,781	7	6
5. Postage	115	6	6	89	15	0	90	14	6	150	4	0	143	6	10	96	7	6	148	0	0	63	4	6	103	7	0	113	2	0	164	14	8	242	2	10	1,521	5	4
	16,747	12	5	22,057	13	11	15,844	8	2	26,303	8	1	22,085	13	1	16,912	0	5	17,189	11	9	21,714	4	5	20,623	11	0	18,484	9	8	17,858	15	1	26,882	8	8	2,42,705	4	8
	48,577	2	7	42,760	5	10	31,296	7	5	71,940	5	5	64,525	8	3	52,553	11	7	49,599	4	5	45,818	10	1	38,63	8	1	32,757	2	0	48,941	10	0	69,757	8	4	5,97,162	2	2

A. E. WILD, *Asst. Conservator,*

For Offy. Conservator of Forests, Panjáb.

No. 21.

FOREST DEPARTMENT, PANJAB.

Annual Summary of Revenue and Expenditure in the different Divisions during 1873-74.

CLASSIFICATION.	Direction.			Satlaj.			Biás.			Rávi.			Chináb.			Jhelam.			Fuel Reserve.			Plantation.			Total.		
RECEIPTS.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.
I. Sale of timber at depôts	...	...	...	26,101	15	6	1,54,445	12	8	99,444	5	6	1,48,397	11	1	34,304	1	5	6.859	8	4	...	...	...	4,69,553	6	6
II. Sale of timber removed by purchasers ...	...	...	...	4,955	0	0	19,155	5	11	162	12	0	266	4	3	25,802	14	2	39,717	4	4	594	2	6	90,653	11	2
III. Duty on foreign timber	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
IV. Permit fees	...	...	...	25	2	3	...	...	...	...	...	...	...	...	...	...	...	...	1,277	11	10	4,039	3	10	5,342	1	11
V. Grazing dues	...	...	...	...	...	...	2,063	3	2	10	12	0	...	...	...	9,047	5	5	1,35,476	0	2	7,526	12	6	1,54,124	1	3
VI. Sale of fruits, &c.	...	...	...	215	0	0	1,158	7	9	...	...	...	...	...	...	...	...	...	331	10	3	840	12	8	2,545	14	8
VII. Sale of confiscated timber	...	...	...	48	0	0	...	...	...	12	4	0	74	9	0	7	10	0	...	...	...	...	...	...	142	7	0
VIII. Fines and forfeitures	...	...	...	...	...	...	1,789	15	1	7	0	0	34	10	8	2,049	12	4	150	11	4	155	15	0	4,179	0	5
IX. Miscellaneous	...	...	...	10	14	0	320	7	6	1,269	0	0	1,272	6	9	9	0	0	2,835	11	7	281	3	2	5,998	11	0
TOTAL RECEIPTS	...	...	...	31,355	15	9	1,78,924	4	1	1,00,906	1	6	1,50,045	9	9	71,220	11	4	1,86,648	9	10	13,438	1	8	7,32,539	5	11
CONSERVANCY AND WORKING.																											
I. Timber expenses	...	...	...	24,408	9	7	57,127	7	10	33,626	1	9	29,471	14	11	23,101	14	1	40,131	11	0	...	...	...	2,07,867	11	2
II. Purchase of stock	...	...	...	837	6	4	569	14	9	380	14	6	311	9	3	1,120	9	0	919	9	11	495	9	0	4,635	8	9
III. Feed and keep of cattle...	...	...	...	129	11	0	...	...	...	...	...	...	...	...	...	...	...	...	511	4	10	...	...	...	640	15	10
IV. Rent of leased forests	...	...	...	1,460	0	0	...	...	...	...	...	...	21,000	0	0	24,994	1	8	3,780	0	0	...	...	...	51,234	1	8
V. Charges on collecting Revenue, &c. ...	...	...	...	...	...	...	...	...	...	...	...	...	16	8	9	...	...	...	242	1	6	...	...	...	258	10	3
VI. Plantations	...	...	...	77	0	0	2,404	14	3	5,831	6	0	1,370	1	9	1,467	7	6	2,546	15	0	44,410	1	10	58,107	14	4
VII. Forest works	...	...	...	...	...	...	442	11	6	380	12	0	...	...	...	...	...	...	140	13	6	414	9	3	1,378	14	3
VIII. Forest Survey	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
IX. Experiments on timber	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
X. Communications and Buildings	...	...	...	3,589	11	3	2,962	15	2	7,445	10	3	7,156	5	6	3,292	5	5	570	10	0	5,315	7	8	30,333	1	3
TOTAL CONSERVANCY AND WORKING. ...	...	...	...	30,502	6	2	63,507	15	6	47,664	12	6	59,326	8	2	53,976	5	8	48,843	1	9	50,635	11	9	3,54,456	13	6
ESTABLISHMENT.																											
I. Salaries	24,222	12	3	16,264	8	10	15,508	8	0	18,241	2	8	14,987	9	7	22,465	2	6	55,591	9	8	21,068	12	10	1,88,350	2	4
II. Travelling Allowances	3,659	11	7	2,300	6	4	5,179	12	7	4,605	0	11	5,466	2	3	6,193	7	7	8,156	4	9	7,099	5	4	42,660	3	4
III. Contingencies...	1,426	4	7	1,028	3	1	1,411	14	6	751	4	9	1,179	11	3	2,683	2	0	2,498	15	1	715	7	9	11,694	15	0
TOTAL ESTABLISHMENT ...	29,308	12	5	19,593	2	3	22,100	3	1	23,597	8	4	21,633	7	1	31,341	12	1	66,246	13	6	28,883	9	11	2,42,705	4	8
GRAND TOTAL EXPENDITURE ...	29,308	12	5	50,095	8	5	85,608	2	7	71,262	4	10	80,959	15	3	85,318	1	9	1,15,089	15	3	79,519	5	8	5,97,162	2	2

A. E. WILD, *Asst. Conservator,*

For Offg. Conservator of Forests, Panjáb.

No. 22.

FOREST DEPARTMENT, PANJAB.

Annual Abstract Account of the Cash Transactions of the Department during the year 1873-74.

	Rs.	A.	P.		Rs.	A.	P.
To Cash Balance on 1st April 1873	53,163	5	0	By Expenditure chargeable to work, including allowances for wear and tear of dead Stock and Buildings	5,88,970	5	7
„ Remittances from Treasuries	5,82,222	5	10				
„ Revenue from all sources	7,32,539	5	11				
„ Funds	3,690	0	9	„ Balance of expenditure on account of dead Stock and Buildings	27,974	14	2
„ Cash Recoveries	19,783	1	7	*Government.*			
„ Recoveries from Contractors	5,374	14	4	„ Remittances to Treasuries	4,57,826	9	10
„ Transfers from the P. W. D	5,933	0	2	„ Transfers to Accountant General for adjustment ...	2,65,456	13	5
„ Government of Bombay	500	0	0	„ Military Department	875	2	8
„ Military Department	531	4	0	„ Refunds	11,975	3	11
„ Suspense	254	3	8	„ Advances to Contractors	995	0	0
„ Provincial Services, Office Rent	60	0	0	„ Suspense Account	110	0	0
„ Income Tax	7	4	8	„ Cash Balance on 31st March 1874	49,875	12	4
Total ...	14,04,058	13	11	Total ...	14,04,058	13	11

A. E. WILD, *Asst. Conservator,*

For Offg. Conservator of Forests, Panjáb.

No. 23.

FOREST DEPARTMENT, PANJAB.

Annual Statement of Outstandings and Liabilities of the Department on account of Contractors and Disbursers during 1873-74.

A.—Amounts charged under Advances Recoverable.

DIVISIONS.	AT OPENING OF THE YEAR.		Advances.	Recoveries.	Due by Contractor.	Due to Contractor.
	To Contractor.	By Contractor.				
Satlaj ...	...	4,473	210	210	4,473	...
Biás ...	...	1,600	60	1,560	100	...
Ráví ...	...	...	...	...	...	...
Chináb ...	...	...	...	...	...	...
Jhelam ...	...	...	180	180	...	...
Fuel Reserve ...	...	91,373	500	3,177	88,696	...
Plantation ...	...	626	...	203	423	...
Direction ...	5	...	45	45	...	5
	5	98,072	995	5,375	93,692	5

B.—Amounts charged off to Conservancy and Working.

DIVISIONS.	AT OPENING OF YEAR.		Advances.	Recoveries.	Due by Contractor.	Due to Contractor.
	To Contractor.	By Contractor.				
Satlaj ...	...	2,369	1,284	3,313	340	...
Biás ...	...	28,698	27,011	38,709	17,000	...
Ráví ...	...	5,491	16,577	10,471	11,597	...
Chináb ...	...	510	14,383	14,615	278	...
Jhelam ...	...	...	...	...	...	...
Fuel Reserve ...	...	5,105	24,584	1,107	28,582	...
Plantation ...	...	11,263	310	6,560	5,013	...
Direction ...	...	...	...	...	...	...
	...	53,436	84,149	74,775	62,810	...

C.—Outstandings on Sales Account.

DIVISIONS.	Balance at opening.	Supplies.	Revenue.	Balance due.	Remarks.
Satlaj ...	12,082	28,797	29,710	11,169	
Biás ...	10,096	1,82,175	1,74,581	17,690	
Ráví ...	10,606	92,695	92,481	10,820	
Chináb ...	7,462	1,49,919	1,48,740	8,641	
Jhelam ...	...	42,012	42,012	...	
Fuel Reserve ...	55,945	1,42,368	1,37,578	60,735	
Plantation ...	2,486	11,600	13,086	1,000	
	98,677	6,49,566	6,38,188	1,10,055	

A. E. WILD, *Asst. Conservator,*
For Offg. Conservator of Forests, Panjáb.

No. 24.

FOREST DEPARTMENT, PANJAB.

Statement of Timber brought to Depôts from Forests during 1873-74.

DIVISIONS.	Description of Timber.	Pieces or Logs.	Cubical contents.	*Total of each River.* Pieces or Logs.	*Total of each River.* Cubical contents.	REMARKS.
Satlaj ...	Deodár ...	2,801	42,630	...	...	
	Sleepers ...	12,843	17,081	15,644	59,711	
Biás ...	Deodár ...	2,121	70,630	...	...	
	Pines ...	23	494	...	...	
	Sleepers ...	45,637	60,697	47,781	1,31,821	
Rávi ...	Deodár ...	1,117	42,602	...	...	
	Pines ...	2,106	37,414	...	...	
	Fancy Wood	1	...	...	...	
	Sleepers ...	12,959	17,235	16,183	97,251	
Chínáb ...	Deodár ...	7,933	1,05,921	...	...	
	Pines ...	2,588	54,021	...	...	
	Sleepers ...	9,979	13,272	20,500	1,73,214	
Jhelam ...	Deodár ...	3,563	83,347	...	...	
	Pines ...	2,169	36,217	5,732	1,19,564	
Fuel Reserve ...	Pines ...	6,320	59,532	...	...	
	Sleepers ...	50	156	6,370	59,688	
Grand Total ...	...	...	...	1,12,210	6,41,249	

A. E. WILD, *Asst. Conservator,*

For Offg. Conservator of Forests, Panjab.

No. 25.

FOREST DEPARTMENT, PANJAB.

Annual Timber Account for the year 1873-74.

I.—Stock in hand at following Depôts:			*I.—Timber removed from Depôts.*		
Satlaj	29,351		Satlaj	25,163	
Biás	4,348		Biás	46,301	
Ráví	24,643		Ráví	20,912	
Chináb	27,583		Chináb	41,768	
Jhelam	16,775		Jhelam	7,127	
Fuel Reserve	6,169	1,08,869	Fuel Reserve	2,731	1,44,010
II.—Timber received at following Depôts:			*II.—Used in depôt works,* Biás	22	
			Error in opening balance, Jhelam	277	
			Do. Do. Ráví	13,240	13,539
Satlaj	15,644		*III.—Stock in hand at close of year.*		
Biás	47,781				
Ráví	16,183		Satlaj	19,832	
Chináb	20,500		Biás	5,806	
Jhelam	5,732		Ráví	6,674	
Fuel Reserve	6,370	1,12,210	Chináb	6,315	
			Jhelam	15,103	
			Fuel Reserve	9,800	63,530
Total ...	...	2,21,079	Total ...	...	2,21,079

A. E. WILD, *Asst. Conservator,*

For Offg. Conservator of Forests, Panjáb.

No. 26.

FOREST DEPARTMENT, PANJAB.

Statement showing the amount realized and due on account of Timber sold during 1873-74.

Divisions.	No. of pieces sold.	Cubical contents.	Amount realized and due for timber sold.	Average amount per log or sleeper.			Average cubical contents per log or sleeper.	Average cost per 100 cubic feet.			Remarks.
				Rs.	A.	P.		Rs.	A.	P.	
Satlaj	1,859	31,169	13,108	7	0	10	16·76	42	0	10	Logs.
Do.	23,304	30,994	12,081	0	8	4	1·33	38	15	7	Sleepers.
Biás	3,415	1,03,556	77,159	22	9	6	30·32	74	8	1	Logs.
Do.	42,886	57,038	85,069	1	15	8	1·33	149	2	3	Sleepers.
Ráví	14,143	2,03,604	88,771	6	4	5	14·39	43	9	7	Logs.
Do.	6,769	9,003	3,697	0	8	8	1·33	41	1	0	Rejected sleepers.
Chináb	20,938	3,76,612	1,15,901	5	8	6	17·98	30	12	4	Logs.
Do.	20,830	27,704	34,126	1	10	2	1·33	123	2	10	Sleepers.
Jhelam	7,127	1,29,376	32,400	4	8	8	18·15	25	0	9	Logs.
Fuel Reserve	2,343	19,343	3,830	1	10	1	8·26	19	12	9	Logs.
Do.	396	1,235	246	0	9	11	3·12	19	14	8	Sleepers.
Total ...	1,44,010.	9,89,634	4,66,388	...	...	...	...	...	...	...	

Deduct amount due but not realized	22,512
Balance	4,43,876
Add amount realized on account of former years	14,438
Total shown as Revenue on Timber sales.	*4,58,314

* 4,58,314, plus 11,239, value of fire-wood, &c, equal 4,69,553 Revenue under R. I., *vide* Form No. 21.

A. E. WILD, *Asst. Conservator,*

For Offg. Conservator of Forests, Panjáb.

No. 27.

FOREST DEPARTMENT, PANJAB.

Statement showing the amount expended on account of Timber received from the different Forest Divisions during 1873-74.

Names of Divisions.	No. of logs or pieces.	Cubical contents.	Timber expenses.	Conservancy expenses, cost of Establishment, &c., of the Department, excluding Direction.	Total amount expended, excluding Direction.	Average amount paid per log or sleeper.	Average cubical contents per log or sleeper.	Average amount paid per 100 cubic feet.	REMARKS.
Satlaj	2,801	42,630	17,406	11,743	29,149	10·41	15·21	68·37	Logs.
Do.	12,843	17,081	11,636	7,850	19,486	1·52	1·33	114·08	Sleepers.
Biás	2,144	71,124	16,116	3,240	19,356	9·02	33·17	27·21	Logs.
Do.	45,637	60,697	39,412	18,860	58,272	1·27	1·33	96·00	Sleepers.
Ráví	3,224	80,016	26,384	18,512	44,896	13·93	24·81	56·10	Logs.
Do.	12,959	17,235	7,242	5,082	12,324	0·95	1·33	71·50	Sleepers.
Chináb	10,521	1,59,942	27,027	19,838	46,865	4·45	15·20	29·30	Logs.
Do.	9,979	13,272	2,445	1,795	4,240	0·42	1·33	31·94	Sleepers.
Jhelam	5,732	1,19,564	23,102	31,342	54,444	9·49	20·85	45·70	Logs.
Fuel Reserve ...	6,320	59,532	...	...	...	...	9·41	...	Logs.
Do. ...	50	156	...	...	...	...	3·12	...	Sleepers.
TOTAL ...	1,12,210	6,41,249	1,70,770	1,18,262	2,89,032	...	...	...	

A. E. WILD, *Asst. Conservator,*
For Offg. Conservator of Forests, Panjáb.

No. 28.

FOREST DEPARTMENT, PANJAB.

Annual Account of Forest Revenue for 1873-74.

RECEIPTS.		Rs.	A.	P.	EXPENDITURE.		Rs.	A.	P.
mount of Revenue realized in 1873-74	...	7,32,539	0	0	Amount disbursed in 1873-74	...	5,97,162	0	0
educt—					*Deduct*—				
Amount realized on account of former periods	...	54,748	0	0	Amount disbursed on account of former years	...	24,994	0	0
Balance	...	6,77,791	0	0	Balance	...	5,72,168	0	0
dd—					*Add*—				
Outstandings on account of the year S. A. 66,126 0 0		...		...	Amount due for transactions during the year under review, but not disbursed	...	16,500	0	0
Ditto ditto C. A. 58,425 0 0		1,24,551	0	0					
Value of the year's transctions	...	8,02,342	0	0	Real cost of the year's transactions	...	5,88,668	0	0

Value of the year's transactions	...	8,02,342	0	0
Cost of do. do.	...	5,88,668	0	0
Balance	...	2,13,674	0	0
Deduct difference between the value of Stock at the commencement and close of the year		2,20,528	0	0
Net result of the year	...	6,854	0	0

Surplus.

Deficit.

A. E. WILD, *Asst. Conservator,*

For Offg. Conservator of Forests, Panjáb.

Area of reserved Forests.

	Area in 1872-73.	Added during the year.	Excluded or transferred to other heads.	Total remaining in 1873-74.
	Sq. Miles.	Sq. Miles.	Sq. Miles.	Sq. Miles.
Bassáhir	80·00	...	...	80·00
Hoshiárpúr	25·08	...	...	25·08
Núrpúr	6·29	8·91	0·05	15·15
Kulú and Párbatti	11·87	16·03	...	27·90
Seoráj	6·66	5·20	...	11·86
Kálátop and Bakloh ...	12·00	...	...	12·00
Chambá	100·11	4·00	....	* 104·11
Ráwalpindí	504·00	...	....	504·00
Dúngágalí	64·09	...	....	† 64·09
Khánpúr	49·67	...	...	‡ 49·67
Kághán	...	89·82	...	89·82
Sirán	...	32·79	...	32·79
Northern Fuel Reserve Division...	1,024·00	...	...	1,024·00
Central do. do. ...	2,241·00	...	401·30	1,839·70
Plantation Division ...	18·05	0·08	1·42	16·71
TOTAL ...	4,142·82	156·83	402·77	3,896·88

* Preliminary. No survey taken place yet.
† Erroneously shown as 127 in last Return.
‡ Do. do. 99 do.

Area of unreserved Forests.

	Area in 1872-73.	Added during the year.	Excluded or transferred to other heads.	Total remaining in 1873-74.
	Sq. Miles.	Sq. Miles.	Sq. Miles.	Sq. Miles.
Bassáhir	100·00	...	...	100·00
Núrpúr	72·62	0·05	15·21	57·46
Derah	37·29	...	...	37·29
Hámírpúr	32·08	...	...	32·08
Kulú	59·28	...	15·36	43·92
Seoráj	30·26	...	4·21	26·05
Chambá	39·00	...	4·00	35·00
Hazárá	529·00	1,377·33	...	1,906·33
Plantation Division	8·05	...	...	8·05
TOTAL ...	907·58	1,377·38	38·78	2,246·18

A. E. WILD, *Asst. Conservator,*
For Offg. Conservator of Forests, Panjáb.

Area of Plantations.

PLANTATIONS.	Area in 1872-73.	Total cost.	Area added during 1873-74.	Amount expended during 1873-74.	Total area up to 1873-74.	Total expenditure incurred up to 1873-74.
	Acres.	*Rupees.*	*Acres.*	*Rupees.*	*Acres.*	*Rupees.*
Náchár	200	440	...	40	200	480
Shaltú	150	559	...	37	150	596
Naushera	510		...		510	
Dungrí	20		...		20	
Siál Behál	85		...		85	
Dára Behál	36	2,372	2	2,731	38	5,103
Latúrá	...		67		67	
Chitril	...		2		2	
Kálátop and Bakloh ...	7,680	9,106	...	...	...	...
Guárí	12	...	...	...	12	...
Búsú	...	...	50		50	
Dhaurí	...	...	25	1,768	25	1,768
Jungto Bunní	...	...	12		12	
Purtí	25		...		25	
Ghó	46	2,805	...		46	
Ajog	22		...	1,370	22	4,175
Bamal	80		...		80	
Changa Manga	6,250	1,91,533	966	36,440	7,216	2,27,973
Rávi	600	12,200	...	472	600	12,672
Khánwah	360	10,314	...	549	360	10,863
Jugián-*cum* Shahderah ...	900	11,518	...	2,096	757 (1)	13,614
Sádhánwáli-*cum* Jhoke ...	539	5,011	320	4,711	836½ (2)	9,722
Nág	412	25,573	...	803	412	26,376
Jálandhar	46	3,158	4½	98	50½	3,256
Phillour	235	12,248	4	304	239	12,552
Ludiánah	200	5,252	...	267	190 (3)	5,519
Jagadhrí	200	6,864	...	1,625	183½ (4)	8,489
Dehli	510	6,556	...	2,138	510	8,694
Tillauri	477	8,089	...	1,154	477	9,243
Sarangwál	40	1,277	...	...	40	1,277
Ambálah	1	83	...	143	1	226
Kathála	135	7,209	...	1,652	135	8,861
Thatta Fakír-ullah	393	2,879	...	135	393	3,014
Kikránwáli	576	790	...	311	576	1,101
Tera	660	34,642	...	...	660	34,642
Rodeshah	270	19,705	...	...	270	19,705
Sarái Amánat Khán ...	300	20,253	...	...	300	20,253
Experiments	...	451	...	5	...	456
Plantation Dn. expenditure	...	1,29,788	...	22,705	...	1,52,493
Total ...	21,970	5,30,675	1,452½	81,554	15,550½	6,03,123

*This was included both as a Plantation and a Reserved Forest in last Return.

(1). 143 acres have been cut away by the action of the river.

(2). 22½ ditto ditto ditto

(3). The area in 1872-73 was only estimated; this is according to a recent survey.

(4). ditto ditto ditto

Area of Forest tracts protected from fire.

Forest tract protected from fire.	Area in 1872-73.	Total cost.	Additional area protected in 1873-74.	Amount expended in 1873-74.	Total area protected up to 1873-74.	Total expenditure incurred up to 1873-74.
		None specially protected.				

A. E. WILD, *Asst. Conservator,*
For Offg. Conservator of Forests, Panjáb.

Prosecutions for breaches of the Forest Rules.

Forest Division.	No. of Prosecutions.		Convictions obtained or still pending.	
	No. of cases.	No. of persons.	No. of cases.	No. of persons.
Bias River Rules	22	37	22	37
„ Forest „	181	437	168	423
Satlaj	4	...	4	...
Upper Rávi	8	10	7	8
Lower Rávi ,...	9	9	9	9
Upper Chináb...	...	...	...	...
Lower Chináb...	6	13	6	13
Jhelam	37	...	37	...
Ráwalpindi	132	...	132	...
Fuel Reserve Northern	53	...	51	...
Do. Central	46	...	40	...
Plantation	1	1	1	1
Total	499	507	477	491

A. E. WILD, *Asst. Conservator,*
For Offg. Conservator of Forests, Panjáb.

Proceedings of the Hon'ble the Lieutenant-Governor, Punjab, in the Department of Revenue, Agriculture and Commerce (Forests),—No. 353F., dated 15th October 1874.

READ—

Report on the Forest Administration of the year 1873-74, furnished by Captain WILLIAM STENHOUSE, Officiating Conservator of Forests.—Received on 3rd October.

REMARKS.—The report is generally far more satisfactory than that of last year.

2. The return showing the area of the reserved forests shows indeed a decrease of 246 square miles, but this is mainly the result of the re-transfer of a large portion of the rakhs of the Derah Gházi Khán district to the Civil Department under circumstances which will be noticed hereafter; but excluding the Derah Gházi Khán rakhs the reserved forest area has been increased by 155 square miles by the addition of valuable forests in Hazára, Kúlú, Seoráj and Núrpur, making the total area 3,890 square miles; the area of unreserved forests has been increased by 1,377 square miles by the addition of the second class forests of Hazára, the total area being now 2,246 square miles.

3. The facts regarding the re-transfer of the Derah Gházi Khán rakhs to the Civil Department have been inaccurately reported by the Conservator of Forests: the number of acres to be made over for strict conservancy is not 4,000 only, but 40,000, more or less. There are no "Wazíri" rakhs in Derah Gházi Khán, and Imám Baksh Khán is not a Wazíri, but a Mazári, Chief. The circumstances were as follows:—In December 1873 the Lieutenant-Governor carefully discussed the question of forest conservancy in Derah Gházi Khán with the Deputy Commissioner, the Settlement Officer, and the Forest and other Officers.

From the report of the Forest Officers it appeared that all the principal rakhs in the Rájanpur tahsíl north of the rakhs known as the Mazári rakhs, and certain other rakhs in the remaining tahsíls, had been selected as suitable for strict conservancy, the total area selected being 40,000 acres. The rakhs in the Mazári iláka were well suited for fuel purposes, but it was not proposed to take them up in consequence of the complicated tribal rights and interests therein.

In the course of discussion it appeared that there was some doubt whether in the case of the remaining selected rakhs the rights of private parties had been fully enquired into and settled. Under the circumstances, His Honor directed that Captain Sandeman, Deputy Commissioner, and Mr. Fryer, Settlement Officer, should go over the ground with Captain Atkinson and make a revised selection of rakhs, care being taken that the rakhs selected be indisputably the property of Government, unencumbered with vested rights, and otherwise suitable for transfer. With regard to the Mazári rakhs it was to be arranged, as the best practical solution of the difficulty, to appoint Imám Baksh Khán, the Mazári Chief, a Sub-Assistant Conservator of Forests for the tracts in question, and to grant him as remuneration one-half of the royalty fees demandable; that he should arrange for the conservancy of the rakhs under the orders of the Deputy Commissioner, who should be guided by the advice of the officers of the Forest Department; that all other rakhs should be under the control of the Deputy Commissioner.

4. Fair progress seems to have been made in the demarcation of revised forest tracts in the Biás, Rávi and Chenáb divisions, and the re-demarcation of those of the Satlej division; and it is to be hoped that during the present cold season the Settlement Officer will effect a separation of those Government forest lands in the Ráwalpindi district which are suitable for strict conservancy. Nine plantations, aggregating 3,307 acres, were surveyed and mapped during the year, and the total area of the plantations at the close of the year was 16·71 square miles. Measures will of course be taken by the Forest Officer to put in order the boundary pillars of the Multán rakhs already made over to the Forest Department. Orders will be issued to the Deputy Commissioner of Sháhpur to lose no time in verifying and marking the boundaries of the rakhs of the Sháhpur district. The re-erection of boundary marks in the Gujrát district is in hand.

5. With regard to section II. of the Report, His Honor is glad to be able to state that fewer complaints of inconsiderate action on the part of Forest Officers were received during the year 1873-74 than during the year preceding, and it may be gathered from the returns that the forest rules, though by no means allowed to become a dead-letter, were enforced with more judgment than heretofore. Thus in the Biás division there were only 9 cases, out of 203, dismissed. It is not stated in how many of the 112 cases of breach of forest rules in the Jhelam and Ráwalpindi districts conviction was obtained; but in the Fuel Reserve Divisions out of 77 cases disposed of all but 5 were prosecuted to conviction. His Honor regrets to observe that fires in the Ráwalpindi rakhs were numerous, but no comparison has been made of the number of fires and extent of damage done in 1873-74 as compared with the preceding year, when 13,610 acres of forest were destroyed. This should be done in future reports. No fires, His Honor is glad to notice, occurred in the Jhelam district.

6. It is observed with satisfaction that operations for supplying working plans for the reserved forests of the Satlej division have at length been taken in hand by Mr. Ribbentrop, and that the deodar forests of Bassáhir are reported to have nearly recovered from the injury done by timber speculators.

7. The successful reproduction of deodar plants in the Dáná Beál forests of the Biás Division, and the progress made in the plantation of bamboo, mahogany and other trees in the same division, is gratifying. His Honor is also glad to notice the formation of deodar nurseries in Upper Rávi and Kálatop and Bakloh, and that effect has been given to the orders of the Government of India in regard to concentrating operations at Ajog in the Chenáb Division. Some of the experimental sowings of deodar and other trees at Changlagalli were not, it appears, wholly successful, but His Honor trusts that they will still be actively prosecuted, advantage being taken of the experience gained last year.

8. The drain of the second class rakhs of the Ráwalpindi Division for the building and fuel requirements of the people, cantonments, commissariat and public works is no doubt immense, and the greatest pains must be taken, by systematic working and measures of reproduction, to economize and increase the supply. Accordingly the Forest Rules are being carefully enforced under the superintendence of Captain Wace, Settlement Officer, in order that he may be able from practical experience to suggest measures for remedying existing defects, making the rules as stringent as possible in the interests of economy and conservancy, without, however, placing unreasonable restrictions on the supply of fuel and wood for agricultural purposes for the village populations. For the same reasons His Honor is glad to observe that the preparation of simple plans for the treatment of rakhs of the fuel reserve of the Central Division has been taken in hand. Similar rules should be drawn up for the fuel reserve in the Northern Division.

9. The management of the Changa Manga Plantation continues to be successful and creditable to the Divisional Officer, Mr. Minniken, and his assistant, Mr. Calthrop.

10. With regard to the proposed plantation at Kathala efforts were made to avoid the necessity of taking up the lands in question, which are populous and well cultivated, and an officer was specially deputed to see if it were possible to effect the required object of providing a fuel supply for the Northern State Railway by strictly conserving some of the *rakhs* in the Sháhpur district. This, however, having been found to be impracticable, orders have been again issued for taking up the land necessary for the plantation at Kathala in a manner as little harassing to the people as may be practicable.

11. With regard to the yield and working of the forests, no return is given, in the appendix, of the trees felled during the year, although the first statement is designated "Account of trees felled, logged," &c. But a com-

parative return of fellings for 1872, 1873 and 1874, which has been compiled from the body of the reports, is given below :—

Trees felled.

	1872-73.	1873-74.
Satlej Division	5,133	186
Biás „ ...	8,729 } 2,269 }	2,356
Rávi „ ...	225	278 also 3,258 cubic feet of deodar and 1,552 cubic feet of Abies Smithiana.
Chenab „ ...	66	952
Jhelam „ } (Hazára) „ } ...	448 deodar } 1,289 other trees }	1,066

From this it appears that the fellings largely decreased in the Biás, Satlej and Jhelam Divisions during the year under review. It is not stated whether this diminution is solely the result of the exhausted state of the forests, or was designed with reference to the amount of stock in hand, or other considerations.

12. While felling operations were on a much smaller scale during the year under report, the launching operations and sale transactions were much larger, as will be seen from the following totals :—

Logs launched in		Timber received in depôt in		Pieces sold in	
1872-73.	1873-74.	1872-73.	1873-74.	1872-73.	1873-74.
44,245	55,622	61,741 logs.	112,210 logs.	52,002 =541,590 cubic feet.	144,010 =989,634 cubic feet.

the stock in hand being reduced from 108,869 pieces to 63,530 pieces at the close of the year.

The state of the stock of wood at the Kalesar depôt, reported in paragraph 102, is unsatisfactory and apparently not creditable to the management of the officer in charge.

13. *Fuel Reserve.*—No clear comparison has been made between the sales of wood for fuel from the Central and Northern Divisions for 1872-73 and 1873-74 respectively, but in regard to the latter division it is stated that the proceeds of fuel sales have fallen far short of the estimate, as purchasers can get fire-wood cheaper from zamindárs, who denude their village woodlands and convert the wood into money without any thought about future supplies.

If this is a true explanation of the falling-off, an increase in this branch of forest revenue may be hereafter anticipated, when the private sources of supply begin to be exhausted.

14. The financial statement shows a surplus of Rs. 1,35,377 in receipts over expenditure, the result partly of increased sales, and partly, His Honor is glad to observe, of economy exercised during the year, especially under the item of timber expenses. If, however, the diminution of stock is taken into consideration the transactions of the year show a small deficit of Rs. 6,854.

15. The general result of the year's history seems to show that, owing partly to the exhausted state of the forests and partly to the competition the Department has to suffer from zamindárs and others who improvidently denude their lands of timber, there is little hope of increased receipts for some time to come, but that, on the contrary, a decrease may perhaps be anticipated. It is therefore most incumbent upon the Department to exercise the strictest

economy in expenditure, and to devote the greatest attention to the work of restoration and reproduction.

16. Of the officers of the Department the services of Mr. Ribbentrop and Mr. Duff deserve to be specially acknowledged, and His Honor is glad to observe the favorable notice of the other subordinate officers named in the report.

ORDER.—Ordered that 350 copies of the Report and this review be forwarded to the Secretary to the Government of India, Department of Revenue, Agriculture and Commerce; also that three copies be forwarded to the Conservator of Forests, Punjab, for information.

By order of the Hon'ble the Lieutenant-Governor,

T. H. THORNTON,
Secretary to Government, Punjab.

No. 128, dated the 3rd February 1875.

From—G. H. M. BATTEN, Esq., *Officiating Secretary to the Government of India,*
To—*The Secretary to the Government of the Punjab.*

I AM directed to acknowledge the receipt of your letter No. 368F., dated 28th October last, forwarding the annual report of the Forest Department in the Punjab for 1873-74, together with a review by His Honour the Lieutenant-Governor, which is so full that it leaves but little to be said by the Government of India.

2. A statement is appended to the report shewing the areas of all the reserved forests in the Punjab; but it is noticed that the entries do not in all cases agree with a detailed statement received with your letter No. 357, dated 19th idem, shewing the lands transferred from the Civil to the Forest Department. On this subject a separate communication will be addressed to you. It is observed however that excluding the area of the leased forests in Bashahr and Chamba, upwards of 3,700 square miles are apparently now in charge of the Forest Department, of which 3,360 square miles are rakhs in the Amritsar, Lahore, Multan and Rawalpindi Divisions. This does not appear to include the rakhs in the Dera Gházi Khan District, the arrangements for the management of which are reported in paragraph 3 of the review.

3. The annual summary of receipts and charges shews the financial transactions of the rakhs under one division (the fuel reserve division); but it has been noticed from the budget that three distinct divisional charges now exist—the Rawalpindi, Northern and Central fuel reserve divisions. The Governor General in Council is convinced that nothing will tend more to place the management of these woodlands on a thoroughly efficient and satisfactory footing than to form them into smaller and manageable divisions; and if this can be so arranged as to make the boundaries of the forest divisions coincide with the boundaries of the civil divisions, the additional advantage will be gained that the local forest officer will naturally be placed in closer connection with the civil officer in whose division or district all his forest lands will be situated.

4. In the management of the rakhs this close co-operation of the civil and forest officers is for obvious reasons indispensable. In many districts the rakhs form the principal grazing grounds of the people, but unless the areas which are to be cut can be closed against cattle, their reproduction cannot be secured. It is most desirable (and this has been acknowledged both by the Punjab Government and by the Government of India) that these rakhs should now be worked to a greater extent than heretofore; but it is admitted on all sides that this cannot be done except under a regular plan of operations for each district or block. The main feature of this working plan must be to arrange the distribution of the areas to be cut in such a manner that those which have been worked may be closed for a sufficient length of time with the least possible inconvenience to the people. The preparation of these working plans has formed the subject of separate correspondence, but I am directed in the present instance to invite your particular attention to the proposal that the distribution of the areas to be cut and closed annually should be carried out by the forest officers in concert with the local civil officers.

5. The financial results of the management of this large area during the year under review are:—

Receipts	...	...	...	Rs. 1,86,648
Charges	...	...	...	„ 1,15,089
		Surplus	...	„ 71,559

This is an exceedingly small surplus from an area of over 3,000 square miles. The two principal items of receipts are grazing dues Rs. 1,35,476, and sale of firewood and charcoal Rs. 39,717. The former must decrease, if larger cuttings are made and more extensive areas are closed, but if this is done the receipts from wood and charcoal will apparently be capable of very large increase. In

paragraph 120 of the report the quantity of wood cut in the rakhs of the Central Fuel Reserve division is given at 1,744,294 cubic feet, but the average outturn of cubic feet per acre is not stated. I am to request that this information may be furnished in next year's report, in which should also be stated what rates were realized per 100 or 1,000 cubic feet, what area was operated upon, and whether the whole of it has been closed, and for how many years. One of the main objects of the annual report is to give a complete account of the yield of the forests in the year reported upon, to explain how that yield has been realized with due regard for the maintenance and improvement of the forests, and to shew that in a revenue point of view the utmost has been made out of that yield. This information should be given in the greatest detail. Where any forest tracts are worked in accordance with the provisions of a regular working plan, a reference to that document will save explanations on certain points, but where no working plan exists the needful information should be given in detail in the report.

6. Attention has been directed, in connection with these rakhs, to the remarks made by the Conservator in paragraphs 32 and 129 of the report, that zemindars of villages which have not a sufficient supply of wood in their common lands have been allowed to cut wood for domestic and agricultural purposes in the Government rakhs free of cost, with certain restrictions and under permits granted by a forest officer or a tahsildar. It is not known whether the particulars of this privilege are correctly reported, but if they are, the effect of this measure upon the protection of the rakhs should be most carefully watched. The Conservator himself notes, what is otherwise well known, that zemindars denude their village woodlands and convert the wood into money without any thought about future supplies. It may thus happen—indeed it is sure to happen—that the supply of wood in the common lands of many villages will be exhausted, and that the requirements of the people will then have to be met from the Government rakhs. His Excellency in Council is of opinion that in such a case it will be necessary to modify the privilege, and to establish depôts from which the people may draw their supplies, for it would be inexpedient to allow them to enter the rakhs and to cut what they required, except on a very small scale and as an exceptional case. But in any case the drain upon the Government rakhs would be great, and the necessity of cutting here and there in order to supply local requirements would prevent the introduction of regular plans of operations.

7. But the main disadvantage of such privileges is that they will have the effect of indefinitely postponing the measures which it would otherwise be most desirable to adopt for gradually giving up considerable areas of these rakh lands for cultivation. His Honour the Lieutenant-Governor will doubtless agree that eventually when the productive powers and the system of treatment of these rakhs are better known, and when the plantations have commenced to yield regularly the supply that is expected of them, it will be desirable for the Forest Department to concentrate its operations upon a smaller area, consisting of the most productive blocks of compact shape, the remainder being given up, not all at once but gradually, as grazing grounds and for cultivation. But this concentration of the forest area will obviously be rendered very difficult, if not impracticable, if the Government rakhs are liable at any time to be burdened with the obligation to furnish wood for domestic and agricultural requirements to the population of the neighbouring villages whose woodlands have been exhausted.

8. The Governor General in Council has noticed with satisfaction from paragraph 78 of the report that the sowing and planting described in the previous year's report, and commended in paragraph 18 of the letter from the Government of India, No. 1864, dated 18th December 1873, reviewing that report, have been successful at least in Bela Pira Ghaib. These experiments should be continued, but it is essential that they should be limited to a few places where permanent supervision is available.

9. From the statement appended to the report, shewing the area of plantations, it is observed that in the plantation division 966 acres were added in Changa Manga, and 320 acres in Sadhanwali-*cum*-Jhoke. From the body of the report it is gathered that the greater part of the Changa Manga extension was successful, and that sissu is now sown mixed with bèr and indigenous

trees, which is satisfactory. But if the report is correctly understood, it would appear that the area added to the Jhoke plantation has only been partially stocked.

10. It is satisfactory, however, to notice that the plantation roads were cleared, and that the plantations themselves were thinned, although only a small portion of the thinnings was saleable.

11. I am to request that in future reports the amount of work accomplished at each of the plantations in the Punjab under the two heads of extension and maintenance may be precisely stated, it being at the same time explained what the expenditure has been on account of each plantation. There seems to be no prospect, however, for some time to come of covering the maintenance charges by the revenue of the year, as the sale of grass and the leasing out of small plots for cultivation seem as yet to be the main sources of revenue in this division.

12. Of the five River Divisions, the Sutlej and Jhelum were worked at a loss. In the Sutlej Division, the receipts amounted to Rs. 31,356, but this was almost absorbed by the working charges, which amounted to Rs. 30,502; the establishment charges, which are Rs. 19,593, representing the deficit. This is not satisfactory, especially as the stock in hand at depôts was diminished from 29,351 to 19,832 pieces, and nearly the whole of the outlay was for timber operations, except Rs. 1,500 for a timber shoot, Rs. 2,000 for building a bridge over the Sutlej, and Rs. 77 for planting. From a joint report lately submitted by the Inspector-General of Forests and Captain Stenhouse it is noticed that there is a prospect of a small surplus from these forests, but it is much less than the Government of India was led to expect from previous reports.

13. In the Jhelum Division, the working charges were Rs. 53,976 against a revenue of Rs. 71,220. Rs. 1,467 were expended on plantations, but nearly all of them were experimental, and it would seem to be better if these were concentrated in a few places. Rs. 3,292 were also expended on communications, but the main outlay was for the production of revenue, and is apparently higher than it ought to have been. The establishment charges amounted to Rs. 31,341.

14. The three paying divisions to which, with the rakhs, last year's surplus is due, are:—

	Receipts.	Charges.	Surplus.
	Rs.	Rs.	Rs.
Beas	1,78,924	85,608	93,316
Ravi	1,00,906	71,262	29,644
Chenab	1,50,045	80,959	69,086

15. It is satisfactory that of the outlay above noted, Rs. 10,429 were expended on plantations and forest work, and Rs. 17,565 on communications. The record, however, of this work given in paragraphs 47 to 60 of the report seems to shew that the work should be more concentrated. Until such work is provided for by a well-considered plan of operations, there is no guarantee that the outlay is incurred in those places and in such a manner as to be most useful. In the leased forests especially, every item of expenditure should be most carefully considered before it is sanctioned.

16. The attention of the Governor General in Council has lately been drawn to the financial results of the working of the Chamba leased forests, which were reported in a letter from the Conservator to the Inspector-General of Forests, No. 1754, dated 31st August 1874. It would seem that since 1865-66 the forests have yielded the large aggregate surplus of Rs. 5,40,766, although Rs. 1,75,832 were paid to the Raja, and Rs. 1,03,153 were expended on plantations and communications. This is more satisfactory than was anticipated, and if the figures are correct there seems no reason to regret that the forests were leased and brought under protection and regular management. The question of the financial results of the Chamba lease and of the amount which, considering the scanty timber resources, it may be expedient to spend for the improvement of these forests, has also attracted the attention of the Governor General in Council when passing orders on the budget estimate of the Punjab Forest Department for 1875-76, and I am to state that His Excellency in Council will be glad if His Honour the Lieutenant-Governor will give the subject his careful attention, and eventually, after it has been fully considered in detail, favour the Government of India with his views thereon.

17. It is satisfactory to observe that no green deodar trees were felled in the Chamba Forests during the year; in the Beas Division, 902 deodar trees were felled for export, and 173 for district works. It would have been well, however, to have explained whether these fellings were prescribed by a working plan or how they were justified with regard to the conservancy of the forests. It is justly remarked in the Lieutenant-Governor's review that the number of trees cut in each division should be entered in the statement detailing the yield of the forests. The form of this statement, as of all statements relating to timber transactions, is not *prescribed*, and should be modified to suit the requirements of the province.

18. In conclusion, I am to say that the Government of India concur with His Honour the Lieutenant-Governor that the report is satisfactory.

PROGRESS REPORT

OF

FOREST ADMINISTRATION

IN THE

PROVINCE OF OUDH

DURING

1873-74

FIRST PART.

SPECIAL.

CHAPTER I.—*State Forests and Leased Forests.*

SECTION. I.

AREA, BOUNDARIES, DESCRIPTIVE ACCOUNT.

THE area of the Forests remains the same as last year.

2. In giving the area of the eighth Section of the Bharaich division, and the four Sections of the Gonda division in the Annual Report for 1867-68, I only gave the area then mapped by the Revenue Surveyor, this area was bounded on the north-east by an arbitrary line at the foot of the hills: the whole of the hills to the watershed has however been considered as Oudh Forests, and should this line of watershed be maintained, a considerable increase will have to be made to the area given. The Nipalese authorities are disputing the boundary and till the decision of the Government of India is given * the area of these portions of the Oudh Forests must remain unknown.

* Conservator's No. 189, dated the 28th July 1874.

SECTION II.

REQUIREMENTS OF THE SURROUNDING POPULATION, PRESCRIPTIVE RIGHTS.

3. The arrangement with the Mahárájah of Bulrampur has turned out very unsatisfactorily. I have reported fully on this matter.*

* Conservator's No. 184, dated the 23rd July 1874.

4. The Mahárájah was given over a tract of 46½ square miles, and was not to call upon the Forest Department for grazing or fuel or building materials for the villagers. Grazing, &c., have however been demanded, under the plea that if they are not given the villagers will leave and fly to Nipal. He has cut down a large quantity of timber and sold it to people who live beyond his Estate: and the people are much worse off than they were under the three mile rule.

5. I have also reported * fully on the third portion of para. 3 of the Government of India's letter No. 1368, dated the 3rd December 1873. The sum of Rs. 1,04,725-5-3 has been received for timber removed by purchasers; of this amount Rs. 35,550-7-0 were for Sissoo from the Gun-carriage Agency, the rest, *viz.*, Rs. 69,174-14-3 was for dead reserved woods, and green and dead unreserved woods, which at the low rates permitted by schedule (Appenix I.) of last year's report represents a very large amount of building material.

* Conservator's No. 551, dated the 13th January 1874.

SECTION III.

Protection.

6. The Forests have been burnt much as usual: though our machinery for protection is improving, we had an unusually dry, and consequently bad season, for protection.

7. The Kheri Sál Forests (Newul Khar and Khyrígarh sub-divisions,) were burnt from end to end in two or three days, very little escaping, as a strong hot north-west wind was blowing when the Forests caught fire in the north-west portion: the fire crossed our narrow roads, as only fifteen feet are kept clear.

8. I have now in hand a scheme for the protection of a portion of the Forests from fire, which is combined with a plan for working timber and fuel, which when fully matured will be sent up for the Chief Commissioner's approval.

9. Most of the block of Sissoo Forest land south-east of Duduaghât, which was protected from fire for the last two years, was preserved.

10. Part of the Kheri Sissoo plantation has been burnt, and if it had not been for the indefatigable exertions of Messrs. Dodsworth, Hill and Wilmot it would have been wholly burnt, the grass in and near it having been several times on fire, even though early in the season a belt was cleared round it. The unsown portion of the Bharaich Sissoo plantation was fired to preserve the sown portion which was not burnt. All the Ramghar miscellaneous plantation was burnt; and the Mohanpur Babool plantation was wholly burnt, but I am glad to say that some of the seed sown last rains, (1873) but which did not germinate then, has come up this rainy season and if protected will give enough seedlings to cover the ground.

SECTION IV.

Management and Improvement.

11. The present plan of timber operations is that recommended by the Inspector General of Forests and myself (Appendix to report for 1867-68,) sanctioned by the Chief Commissioner and approved of by the Government of India. In this plan only about 3,000 first class trees are felled annually in the Kheri Sál Forests (Newulkhar and Khyrígarh sub-divisions.) Our knowledge of the growth of Sál was very scanty in those days; the Bharaich and Gonda divisions had been over worked, so it was considered advisable to give them rest.

12. The evil effect of our present system is that we take out the best first class trees, leaving the crooked and hollow ones to cumber the ground; if they were required for seed they would be usefully retained, but we have plenty of seedlings. These large crooked and hollow trees not only keep the young trees, of which there are plenty, from coming up by depriving them of vertical light, but their wide spreading roots absorb most of the nourishment.

13. I have now, I consider, sufficient data to enable me to state that the average growth of Sál is $\frac{1}{5}$th of an inch of radius annually, so that the time required for a second class tree to become a first class is fourteen years (or under twenty for safety's sake) so that we could if we carried on the old system of selection go on a rotation of twenty years instead of forty which we are now doing.

Class.	Girth.	Radius.	Age or number of rings.
4th Class.	1′ 6″	2″·86	14·30
3rd ,,	3′	5″·72	28·65
2nd ,,	4′ 6″	8″·60	43·30
1st ,,	6′	11″·46	57·30

14. It will be seen in Appendix No. VII of my report of 1869-70 that I gave the measurement of fifty trees, and also that in Appendix X for report of same year, I recommended a new system of timber operations, but in my absence no notice was taken of the latter*, Captain Stenhouse, the Officiating Conservator, contenting himself, when supplying fuel, with only taking out dead trees and branches which the dry wood contractors did not care about taking out as timber.

* Though approved of by the Government of India, in No. 293F, dated the 6th June 1870.
From the Secretary to Government of India, P. W. D., to the Chief Commissioner of Oudh.

15. I have noticed that where lines fifty and a hundred feet broad were cut through the Sál Forests to divide the Forest into blocks in 1868, and following years, the central fifteen feet only being kept clear for traffic, the young Sál trees which have sprung up on the parts cut over are much better than those which are mixed up with the large trees.

16. In the Charda forests (Section V Bharaich division) which till 1866 was in the possession of the Mahárájah of Bulrampur, and in which most of the old trees were cut out or killed, and the young ones cut over for domestic purposes, we have a finer shew of young Sál trees for its size (about ten square miles) than in any other forest; indeed Captain Stenhouse thought that we should soon require to commence thinning operations.

17 Also in the Ramghar grant, where almost every Sál sapling was cut over for sale, being near the Fyzabad market, since it has had rest under the Forest Department, some four years, there are Sál trees of from fifteen to 21 feet high or more.

18. In the Bhira fuel reserves, large spaces were cleared for cultivation, but it has been found almost impossible to eradicate the Sál tree,

19. Lieutenant-Colonel Pearson, Conservator of Forests, North Western Provinces, and Officiating Inspector General of Forests, in Chapter V* of his report on the Kumaon and Gurhwal Forests for 1870-71 has given his experience regarding the growth and proper treatment of Sál Forests, which in a great way corresponds with mine, but I do not share with him the fear (there may be some difference between our respective Forests) that the grass and scrub will choke the young seedlings, (of course if this grass and scrub is fired the seedlings are destroyed) for our Sál Forests are gaining on the grass phántás, and would gain very much more if it were not for the fires which almost annually burn up the young seedlings: in the Bharaich division where, owing to the grazing and fires, in some parts there are hardly any seedlings, it is only necessary to surround a patch of ground without seedlings for a year or two with a thorn fence, and keep out cattle and fires, and the grass and seedlings come up in abundance.*

* Appendix No. I.

20. Where Sál is indigenous to the soil it holds its own against all its enemies, it only wants protection from them to thrive well, it wants no careful tending like many other trees do,

* This was tried on about 4 acres Section VI.

21. Sál has another great advantage, that whereas it shoots freely from small roots it does not do so from the stumps of large trees.

22. From my experience of the present stock of even sound trees, I consider few have been maiden trees, *i.e.*, have come from seedlings (proper) direct but have been kept down by fires or other causes and when their roots have been firmly established they have shot ahead and overcome the difficulties surrounding them. I am of opinion that for the *real regeneration* of the Forests that where there is a good stock of seedlings every thing should be cut over flush with the ground and allowed to start afresh, cattle and fires being kept out at almost any cost, so that the new crop may grow up sound at heart, the covering to the ground would be much greater fron this young growth than under the present system.

23. This system of entire clearance in some parts, and the system advocated in Appendix X of report for 1869-70, (*viz.*, the cutting out trees that will not apparently make good logs) in others, is part of the plan that I have referred to in para. 8 of this report.

24. The blocks in which these operations take place will necessarily be small at first, and consequently can be guarded from fires and cattle, whereas the protection of extensive tracts under present circumstances is almost impossible.

25. Our present system, that of selecting, was one necessitated by financial reasons and our small acquaintance with the growth of Sál and is one by which the growth of the Forest is *not* improved. The plan of 1869-70 is one of improvement, that of 1874-75 one of regeneration of sound trees.

26. Both plans of improvement and regeneration can now be introduced also into certain parts of the Bharaich division, where the operations taken as a whole, could be made to answer financially.

27. Our plantations (by plantations Sissoo and Babool plantations, not Sál, are always meant) labor under great disadvantages, the rainy season, when our officers are obliged to leave the Forests, being the time for sowing, and fires in the dry season are very difficult to be kept from them. It has been found in the Punjab that small plantations do not pay and with our small establishment it is almost impossible to look after small and detached plantations.

28. We sell our windfalls and dead trees (Sál) to purchasers who remove them so that though we with our small establishment cannot take them out, they are utilized. The selling of green Sál trees standing, referred to by Captain Stenhouse in his para. 48 of last year's report was quite exceptional, and he saw too late the mistake that he had made. The selling of standing Sissoo trees to the Fattehgarh Gun Carriage Agency cannot well be helped, and as there is no prospect of natural reproduction, the best thing that can be done is to utilize them before they are burnt: all the old Sissoo trees in the Kheri and Bharaich divisions were water sown, when the rivers Korially, Sardah, and Gogra flowed in different channels to what they do now.

29. The creepers cut in 1864 and following years are in some places making headway again, and require to be looked after.

30. Our land communications are getting much better every year, and wells have also been and are being made, so that labor is much more easily obtainable and there is less sickness than there used to be in the Forests.

31. The advantages of the Soheli route have turned out as I expected (para. 33 of report for 1869-70) the *carting operations* now being under the eyes of one of the Assistants: the great difficulty is, that it is only available part of the year, during the rains: the rendering the Soheli navigable all the year round, by which the *main rafting operations* could be controlled by the

Assistant in charge would nearly double the capital value of the Kheri division, (Newalkhar and Khyrígarh sub-divisions) as we should then be in constant and cheap communication with Byramghât, our principle depôt, where there is a Railway Station from which our timber is taken to all parts of Oudh, to the North Western Provinces, to the Punjab and even to Central India. A project was proposed by Captain Stenhouse in the Annual Report for 1870-71 but has since been allowed to drop; the river has a sandy bed and banks and the difficulties of holding up the water would be very great, but the question is of such importance that the services of an experienced officer in hydraulic works, who could devote his whole attention to the subject, are required.

32. When work was required for people who were badly off in the north-east of the Bharaich and north-west of the Gonda districts, I with the Chief Commissioner's sanction got some roads constructed (in village lands) which will be of great use as they connect the outlying Sections V, VI, VII and VIII* together, and will eventually be used as export roads from the Forests to the river Raptí; also a thousand canoes were made of which three hundred and fifty have since been sold to the Bengal Government. These works helped a large number of people in a time of great pressure and will be remunerative.

* Bharaich Division.

33. With the exception of about eight miles the whole of the line, the boundary between the Oudh Forests and Nipal in the plains, has been made drivable and many miles of new roads have been made and the old ones repaired and kept in order: these roads are greatly used by the people and are of great use to the department in visiting the Forests, in marking off blocks, and other measures of conservancy.

SECTION V.

Yield and Working.

34. The yield in the year has been very good; as a rule we cut one tree out of three first class trees per acre (on an average two-thirds of the trees are not suited for timber) obtaining about 3,000 logs and of these about 1,000 are really straight sound logs or about one-tenth the standing crop of first class trees; we this year shall obtain about 2,000 straight sound logs because we felled in a particularly good block, *viz.*, the northern portion of block thirteen.

35. The fuel operations are not so forward as Captain Stenhouse counted on. I have fully reported * on this matter. Of the five lacs of maunds contracted for, 8,099 maunds were delivered in 1872-73, 1,17,000 maunds have been delivered up to end of 1873-74 the year under review, it is hoped that 3,50,000 maunds will be delivered by the end 1874-75 and the balance in the following year.

* Conservator's No. 623, dated the $\frac{9}{10}$th February 1874.

Conservator's No. 206, dated the 8th August 1874.

36. Captain Stenhouse did not comprehend the difficulty of collecting and conveying 5,00,000 maunds of fuel, nearly 20,000 tons, no arrangements were made for cutting it on one spot near water communication, the consequence has been that a good deal of it has had to be carted sixteen miles, having had to be picked up wherever dead trees and branches could be found, and as a good deal of stuff is burnt in the annual fires the area to be traversed by the carters was necessarily very great, this can be better imagined when I state that 5,00,000 maunds of Sál fuel would compose a continuous closely packed stack of fuel of the ordinary railway dimensions (4′ × 5′) fourteen miles long.

37. The attempt to cart the fuel departmentally was abandoned, as under present circumstances it would have resulted in a loss.

38. Captain Stenhouse himself found that it would not do to raft the fuel with canoes, and had to commence building large boats, there were few of these completed by the end of the year, and owing to the famine in Bengal,

boats could not be hired. I purpose cutting the balance of fuel in one spot either as part of a work of improvement or regeneration during the coming cold season as the price paid by the Railway Company, nineteen rupees, is not sufficient with such a long distance as the fuel has to be carted under the gleaning process, the fuel will thus have time to dry (to save weight in carriage) and be carted next hot weather ready for conveyance by water during the rains of 1875.

39. The subject of supplying fuel has always had my serious consideration and I consider that to work the Forest properly timber and fuel operations must be combined.

SECOND PART.

GENERAL.

Chapter 1.—*Financial Results.*

40. The revenue during the year was,	...	Rs.	3,03,181 4 6
And the expenditure,	...	,,	1,99,434 4 11
Giving a surplus of, ...		Rs.	1,03,746 15 7
But the net surplus of the year was as shewn by Form 28.		Rs.	1,19,952 8 7

The value of stock at the commencement of the year was Rs. 1,98,267-1-9 and at the termination Rs. 2,32,771-15-8.

41. The budgeted surplus was Rs. 27,200 but in February last there was a great demand for timber, little if any having come from Nipal, and timber being urgently required by the Public Works Department, and a good price all round for our new logs having been given Rs. 1-10 per cubic foot, 75,000 odd rupees was realized then which should more properly have come in the present year, but still I hope notwithstanding the realizing the larger surplus last year to realize the estimated surplus of Rs. 76,100-0-0 during the present one.

42. The figures below shew the Financial results of the department since its formation on the 1st October 1861 or a period of twelve and a half years :—

Year.	Expenditure. Conservancy.	Working.	Total Conservancy and Working.	Establishment.	Total Expenditure.	Revenue.
	Rs. As. P.	Rs. As. P.	Rs. As. P.	Rs. As. P.	Rs. As. P.	Rs. As. P.
From 1861-62, To 1864-65,	21,687 9 0	1,04,445 3 5	1,26,132 12 5	64,063 7 3	1,90,196 3 8	1,76,936 0 4
1865-66,	17,798 13 5	12,440 14 0	30,239 11 5	18,356 6 9	48,596 2 2	1,15,975 7 2
1866-67,	11,256 4 3	26,745 0 0	38,001 4 3	21,570 13 5	59,572 1 8	2,01,246 8 11
1867-68,	21,968 8 9	48,600 4 2	70,568 12 11	23,064 11 7	93,633 8 6	66,452 15 6
1868-69,	17,989 9 5	41,575 13 4	59,565 6 9	29,615 5 0	89,180 11 9	1,31,822 2 3
1869-70,	21,626 14 8	41,553 5 11	63,180 4 7	41,987 7 5	1,05,167 12 0	1,06,821 13 4
1870-71,	13,284 15 4	39,587 6 7	52,872 5 11	47,119 1 6	99,991 7 5	60,181 4 9
1871-72,	20,505 13 9	58,906 0 4	79,411 14 1	47,269 5 3	1,26,681 3 4	1,37,766 13 7
1872-73,	15,323 0 7	71,878 9 7	87,201 10 2	56,218 14 5	1,43,420 8 7	2,96,258 2 8
1873-74,	32,403 11 5	1,18,774 9 5	1,51,178 4 10	48,256 0 1	1,99,434 4 11	3,03,181 4 6
Total, ...	1,93,845 4 7	5,64,507 2 9	7,58,352 7 4	3,97,521 8 8	11,55,874 0 0	15,96,642 9 0
				Deduct expenditure, — — —		11,55,874 0 0
				Total cash gain, — — — —		4,40,768 9 0
				Value of assets over liabilities, — —		2,85,787 3 11
				Total profit on 12½ years working, —		7,26,555 12 11
				Average per annum, — ... —		58,124 6 6

43. Among the great causes in the increase of our revenue are the removal to Byramghát of our timber depôt, the opening out of roads from the Forests and the presence of Assistant Conservators on the site of the timber operations.*

* See para. 68 of Report 1869-70.

44. When we commenced working we only got with difficulty eight annas per cubic foot for Sál on the Sarda, which taking the cost of carriage, &c., at four annas allowed us a royalty of Rs. 10 a log* (before the formation of the department the Deputy Commissioners used to issue passes at Rs. 4 per log.) Then to get a sale for our timber we had to cart it to the Kunhout Nadí or to the Ramgunga at Barelí rafting afterwards to Cawnpore getting a profit on our carrying transactions. We now get an average of Rs. 50 per log at an average cost of Rs. 10 giving us a royalty of Rs. 40 per log. This royalty I do not expect will be much increased, our average price for a large lot of new straight sound logs was Rs. 1-10 per cubic foot at Byramghat (or Rs. 65 a log of 40 cubic feet) in February last, but the quantity of timber taken out from the Kheri division alone can with safety be more than doubled, and I see no reason why the surplus in two or three years time should not exceed two lacs annually; not standing at that, but increasing gradually and without trenching on our capital but improving it.

* Taking the average of 40 cubic feet per log.

45. The figures that I have above given shew an annual profit of over Rs. 50,000 on the working for the past twelve and a half years. It is as per statement Rs. 58,124-6-6, but I take the lower figure to allow for any chance depreciation in our assets, Rs. 8,000 odd for twelve and a half years will give over one lac of rupees margin. Besides this we have spent nearly two lacs of rupees or Rs. 15,500 annually in works of improvement and conservancy. This may or may not be considered satisfactory, but it must be remembered that we are dealing with for the most part exhausted Forests, and working well within the limits of safety, and that the capital value of the Forests is yearly increasing, so that in a few years time we shall not only be able to increase the present yield of the Kheri division but also we shall be able to work the Bharaich and Gonda Forests in which no timber operations of any importance have taken place since the formation of the Department.

46. I have reported* on the supposed want of the Forest Department to shew an increasing surplus. If the results of the department are to be judged in a merely financial point of view the increase to our capital should be considered and a money value should be put on our produce given to villagers in the vicinity of the Forests and credit allowed to the department for other benefits conferred by it.

* Conservator's No. 585, dated the 23rd January 1874.

CHAPTER II.

General Remarks.

47. I received charge from Captain Stenhouse on the 5th of November.

48. On giving over charge there were four Assistant Conservators, now there are but three, Mr. Ponsonby the senior having, since Mr. Downs left, had charge of the Bharaich and Gonda divisions. These divisions are very straggling and the charge is I consider too great for one European officer to superintend properly, instead of one officer being put in charge of two divisions two officers should have been appointed to Bharaich. Mr. Dodsworth assisted till the commencement of 1874 by Mr. Hill and from that time by Mr. Wilmot, has charge of the Kheri division in which the only timber operations of consequence take place; a large tract of Forest (the Bhira sub-division) several miles distant from the main division has been added to the charge, without any increase in office or Controlling Establishment.

49. Since November 1865 a period of seven and a half years there have been eight Assistant Conservators who have learnt their work in Oudh and been transferred. This year Mr. Hill who was just becoming useful was replaced by Mr. Wilmot who was totally unacquainted with Hindustaní, so that the executive work has fallen almost entirely on two Assistants.

50. This constant removal of Assistants is disadvantageous to the interest of the Oudh Forest Department, as local knowledge is of very great importance.

51. Mr. Ponsonby, Assistant Conservator, 1st grade, suffered from fever a great part of the year; his work would have been more satisfactory if it had been in a more limited space; he has, however, done good work in road making, &c., both for conservancy and for famine relief works, and also since the end of the financial year in completing and making over to the Bengal Government eight hundred canoes for famine works in Bengal.

52. Of Mr. Dodsworth, Assistant Conservator, 2nd grade, I cannot speak too highly; he has charge of the most important division and has carried out every work entrusted to him with great ability and preserverance, he is a great deal overworked. The failure in supplying the five lacks of maunds of fuel must in no way be attributed to him.

53. I regret extremely that Mr. Hill, Assistant Conservator, 3rd grade, was removed; he was just commencing to be of great use and is an officer of great ability and energy.

54. Mr. Wilmot who has replaced him has done good service in helping Mr. Dodsworth, but labors under great disadvantages in not knowing Hindustaní and joining when work had been well started.

55. Babú Kunhya Lal of the Direction office, Babú Rughobur Dyal of the Kheri office, Forest Rangers Muthra Pershad and Kasim Khán both of Kheri, and Ranger Amanutulla Khán of Gonda deserve favorable mention.

56. I have reported * on the Saw Machinery; not much work has been done in the first year, but every thing is ready for a favorable start next working season.

* Conservator's No. 185, dated the 27th July 1874.

57. A proposal for an increase to the Forest Establishment * has been forwarded, as the area of the Forests has been enlarged since the last scale was sanctioned, and the work of the establishment has been greatly increased, partly from more works been carried on and partly because the miscellaneous revenue is collected by Khám Tehsíl, whereas formerly it was leased to contractors.

* Conservator's No. 487, dated the 6th December 1873.
Do. No. 74, dated the 23rd May 1874.
Do. No. 122, dated the 3rd July 1874.

58. The correspondence of the Conservator with the Chief Commissioner now goes through the Revenue Department, which is a great improvement on the plan of corresponding through the Public Works Department, and I trust that great benefit to the Forest Department will result from the change.

59. I have still been obliged to bring forward the sum of Rs. 23,769-8-8 as due by old contractors on our assests. I have already addressed the Chief Commissioner on the subject* at some length, and I regret that I have not been able to get the sum cleared off before sending in my report, but the compilation of so many different accounts running over so many years will take a long time but will be sent up as soon as possible. The advances now made to carters are nearly recovered in full, thus of Rs. 15,252-13-5 advances made only Rs. 261-8-1 remained outstanding at the close of carting operations in June 1874.

* Conservator's No. 588, dated the 31st January 1874.

LUCKNOW:
The 28th August 1874.

E. WOOD, CAPTAIN,
Conservator of Forests, Oudh.

APPENDIX I.

CHAPTER V.

Future yield of the Forests in timber.

43. I think this should be divided into two parts, *viz*:

1st.—The yield from the regular annual fellings.

2nd.—The yield from conservancy operations.

44. The former must be carried out agreeably to a regular working plan drawn up with a view to the removal of a certain proportion of the mature sound timber every year; the latter will be the result of such operations as from time to time may be executed for opening out and improving the forests. I have now been in the habit of watching Sál forests for about ten years, and the inspection of these dúns very much confirms the opinion to which my mind has for some years been tending, *viz.*, that both for the free germination of the seed, and the effectual reproduction of the forests, as well as for the welfare of the trees, and their progress afterwards, Săl requires a considerable amount of sun and light; and that a Sál forest will bear, and indeed repay (if it does not absolutely require) much more liberal felling than almost any other description of forest in India. Yet this felling must be carefully limited in such a degree that the grass and the scrub jungle should not get a-head instead of the young Sál; for if it does, the latter will infallibly be choked and perish. It is impossible, however, to see any forests, even where heavy felling has been carried on, provided sufficient cover has been left to prevent the coarser descriptions of grass getting hold of the ground, where the growing trees of all classes do not show a marked improvement in their appearance over those in forests which have never been touched. Moreover for the actual free germination of the seed of the Sál tree, it is absolutely necessary to open the ground to the light and sun—a fact which the most cursory examination of a Sál forest will at once show.

45. In regard to the amount of felling which a Sál forest will bear with safety, I believe that in almost every case every sound first class tree may be removed; for, where the second and third class trees are abundant, they protect each other; and where this is not the case, we may be sure that the forests are old, and that from 20 to 50 per cent. of the trees are more or less unsound. The unsound trees are quite as good both for seed shedding and protective purposes as any others, and the protection of them to be removed must depend on the ratio they bear in the forest to the sound ones. But every forest must be treated on its own merits; and, indeed, there are hardly any two portions of the same forest which will bear exactly the same amount of working.

46. For the above reasons, as well as on account of the immense benefit which accrues to young Sál from perfect rest, I am led to advocate a plan of working these—and, indeed, all Sál forests—the basis of which should be the division of the forest into blocks, each of which should be worked in succession to the full extent it will bear with safety, after which it should be shut up for a full period so as to allow the second class trees to become first class. As from seven to ten rings may be generally counted in one inch of the radius of a well-grown Sál tree, I am indeed to think that this period may be estimated as from 30 to 40 years.

47. With a view to obtaining data to frame a working plan based on the above principals, I have directed an enumeration to be made, by the Rangers and Patrols, of all first class trees in the forests which have not yet been worked—the sound and unsound trees being counted separately. But the

system of linear surveys, which is said to be well adapted to some forests, would not answer here, inasmuch as the unsoundness of the trees, which exists in a very different ratio over the forests, contributes so large a disturbing element to all calculations of the value of the timber, that the truth of any estimate based on them would be considerably invalidated

48. From the data thus obtained, a tentative working-plan will be drawn up and submitted for the sanction of Government, and by it the annual yield of the forest in sound timber will be carefully ascertained and defined: but after the inspection I have made, I believe, I can safely commit myself to say that Colonel Ramsay's estimate of one lac cubic feet per annum from the forests of both divisions may confidently be reckoned on, besides whatever is obtained by the removal of partially unsound trees and from thinnings. The regular survey of the forests will follow, and by it the estimate now obtained will be checked, and the working plan corrected accordingly.

49. With regard to the second head—*viz.*, the thinning of forests which are too closely packed—this must be looked on rather as a conservancy operation than as a source of revenue. It must be borne in mind that the best trees will in almost every case be left standing, and that the sale of a large quantity of more or less indifferent wood in distant localities will not in all probability yield much profit. Moreover, it must be carried out absolutely under the personal inspection of the forest officer himself—every tree being selected entirely with a view to the effect which its removal will have on those which are left standing, and not on its value as a timber tree. It must be remembered too, that the forests where these operations are mainly required are those which from their inaccessibility have hitherto escaped the axe, and the making of roads must in every case precede the act of thinning out the trees. But I feel no hesitation in saying that if half the trees were cut down in the untouched portion of the plain forests, as well as in the Mondhal and Nindhor vallies, the remainder would benefit beyond all calculation by the operation.

APPENDIX No. II.

List of Forest Cases tried and punishments awarded in Oudh, during the Financial year 1873-74.

Number.	Name, residence, and occupation of accused.	Date and locality where the offence is stated to have been committed.	Nature and description of offence.	Sentence.	Remarks.
		KHERI DIVISION.			
1	Jokhay and Kirpal, Carpenters, residents of Bhugmurrah,	22nd June 1873, at Pipra Chanda ghata,	Cutting branch of a green tree,	A fine of annas 4 each man.	
2	Jhubua &c., Chumars, 4 men,	8th June 1873, at Hakimpur grant,	Cutting wood and grazing cattle,	A fine of annas 8 each man, in default 7 days imprisonment.	
3	Auseri, Koormi of Dhakwa,	13th March 1874, at Dhakwa,	Cutting green Sissoo,	Rs. 20 fine.	
4	Ramdyal, Kaith of Soonia wan,	22nd June 1873, at Sohaila,	Cutting a tree, ...	Rs. 1 fine, in default 7 days imprisonment.	
5	Koondun of Hali, pergunnah Koothar,	...	...	A fine of annas 8.	
				(Sd.) GOKULCHUND,	
		BHARAICH DIVISION.		*Munsarim, Dy. Commr's. Office, Kheri.*	
6	Daibee, Chumar, ...	26th May 1873, at Chukia forest,	Cutting dry Sál, ...	1 month's imprisonment.	
7	Ruhimbux, and Abdoollah ...	14th November 1873, at Dhurmapur forest,	Cutting 10 ridge poles of green Sál,	Rs. 20 fine, in default 3 months imprisonment. 1 month's imprisonment.	
8	Dhunnee and Daibee, Koormis,	15th May 1873, Section VII. forest,	Cutting 6 green Sál, ...	Rs. 100 fine, in default 6 months imprisonment.	
9	Seetaram, Lohar, ...	18th May 1873, ...	7 props of Sál found in house,	Rs. 10 fine, in default 1 month's imprisonment.	
10	Sookhai and Soorjee, Chumars,	16th October 1873, ...	Cutting reserved wood saplings,	...	Fled away.
11	Moti, Ahir, ...	8th December 1873, ...	Cutting Asna and Tikoee wood,	A fine of annas 8.	
				(Sd.) C. J. PONSONBY,	
				Asst. Conservator of Forests, Bharaich Division.	
		GONDA DIVISION.			
12	Thakoor, Ahir, ...	12th November 1873, near Dhonia Nala in forest,	Lopping Tikoee, ...	Rs. 1 fine, in default 7 days rigorous imprisonment.	
13	Jokun, Ahir, ...	Ditto, ...	Ditto, ...	Rs. 1 fine, in default do. do.	
14	Oree, Ahir, ...	Ditto, ...	Sitting under ditto, ...	...	Released.
15	Oree, Koree, ...	14th November 1873, near Nala, Dara,	Cutting dry Tikoee, ...	10 Stripes.	
16	Bhoojung, Koormi, ...	Ditto, ...	Ditto, ...	10 Stripes.	
17	Sheodial, Pasi, ...	Ditto, ...	Ditto, ...	10 Stripes.	
18	Goolzar, Chumar, ...	16th February 1874, near forest Simrehwa,	Taking out bark of Asna tree, ...	10 Stripes.	
19	Mootroo, Chumar, ...	Ditto, ...	Ditto, ...	10 Stripes.	
20	Pirag, ...	18th March 1874, ...	Cutting Muhowa, ...	Rs. 2 fine.	
21	Buldi, ...	Ditto, ...	Ditto, ...	Rs. 2 fine.	
22	Juggun, Ahir, ...	9th March 1874, ...	Cutting Sál, ...	1 month's rigorous imprisonment.	
				(Sd.) C. J. PONSONBY,	
				Asst. Conservator of Forests, Gonda Division, Oudh.	

E. WOOD, CAPTAIN,

Conservator of Forests, Oudh.

APPENDIX III.

AREA OF RESERVED FORESTS.

Reserved forests.	Area in 1872-73.	Added during the year.	Excluded or transferred to other heads.	Total remaining in 1873-74.
	Square miles.	Square miles.	Square miles.	Square miles.
1st or Kheri Division, ...	426½	...	...	426½
2nd or Bharaich Division, ...	257	...	...	257
3rd or Gonda Division, ...	140	...	...	140
Total., ...	823½	...	...	823½

Unreserved forests.	Area in 1872-73.	Added during the year.	Excluded or transferred to other heads.	Total remaining in 1873-74.
	Square miles.	Square miles.	Square miles.	Square miles.
	Nil.	*Nil.*	*Nil.*	*Nil.*
Total., ...	...	...	...	...

APPENDIX III.—(*Continued.*)

AREA OF PLANTATIONS.

Plantations.	Area in 1872-73.	Total cost.	Area added during 1873-74.	Amount expended during 1873-74.	Total area up to 1873-74.	Total expenditure incurred up to 1873-74.
	Acres.	Rs. As. P.	Acres.	Rs. As. P.	Acres.	Rs. As. P.
Sissoo, babool and bamboo plantations, ..	180	3,381 11 2	..	2,713 8 4	180	6,095 3 6
Total., ..	180	3,381 11 2	..	2,713 8 4	180	6,095 3 6

AREA OF FOREST TRACTS PROTECTED FROM FIRE.

Forest tracts protected from fire.	Area in 1872-73.	Total cost.	Additional area protected in 1873-74.	Amount expended in 1873-74.	Total area protected up to end of dry season 1873-74.	Total expenditure incurred up to 1873-74.
	Acres.	Rs. As. P.	Acres.	Rs. As. P.	Acres.	Rs. As. P.
Kheri Division, ..	12,800	123 3 3	..	149 11 6	12,800	272 14 9
Bharaich Division, ..	about 100,000	0 0 0	..	2 0 0	..	2 0 0
Gonda Division, ..	about 60,000	0 0 0	..	0 0 0	..	0 0 0
Total., ..	172,800	123 3 3	..	151 11 6	12,800	274 14 9

APPENDIX III.—(*Concluded.*)

PROSECUTIONS FOR BREACHES OF THE FOREST RULES.

	Number of prosecution.		Convictions obtained or still pending.	
	Number of cases.	Number of persons.	Number of cases.	Number of persons.
Kheri Division, ...	5	9	5	9
Bharaich ditto, ...	6	9	6	9
Gonda ditto, ...	11	11	11	11
Total, ...	22	29	22	29

E. WOOD, CAPTAIN,

Conservator of Forests, Oudh.

No. 21.

FOREST DEPARTMENT, OUDH.

ANNUAL SUMMARY OF REVENUE AND EXPENDITURE IN THE DIFFERENT DIVISIONS DURING 1873-74.

Classification.	Direction.			Kheri division.			Bharaich division.			Gonda division.			Total.		
	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.
RECEIPTS.															
I. Sale of timber at depôts,	0	0	0	1,56,682	0	5	0	0	0	0	0	0	1,56,682	0	5
II. Sale of timber removed by purchasers,	0	0	0	24,419	3	9	69,426	5	0	10,879	12	6	1,04,725	5	3
III. Duty on foreign timber,	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
IV. Permit fees, ...	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
V. Grazing dues, ...	0	0	0	10,022	7	6	17,297	6	4	7	10	3	27,327	8	1
VI. Sale of fruits, &c., ..	0	0	0	1,815	7	6	1,488	5	4	2,839	7	7	6143	4	5
VII. Sale of confiscated timber,	0	0	0	55	11	3	1,578	14	4	0	0	0	1,634	9	7
VIII. Fines and forfeitures, ..	1	0	0	165	12	8	48	3	0	3	0	0	217	15	8
IX. Miscellaneous, ...	14	8	0	5,734	1	10	492	6	9	209	8	6	6,450	9	1
Total Receipts, ..	15	8	0	1,98,894	12	11	90,331	8	9	13,939	6	10	3,03,181	4	6
CONSERVANCY AND WORKING.															
I. Timber expenses, ..	1,619	0	3	61,145	12	0	6,749	0	0	0	0	0	69,513	12	3
II. Purchases of stock and cattle,	800	7	0	25,495	7	2	13,480	2	3	1,809	3	4	41,585	3	9
III. Feed and keep of cattle,	554	14	5	2,516	3	1	703	10	5	81	0	10	3,855	12	9
IV. Rent of leased forests,	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
V. Charges in collecting revenue on grass, &c.,	19	2	0	899	2	4	2,369	13	3	531	11	1	3,819	12	8
VI. Plantations, ...	45	7	6	2,713	8	4	2,089	14	1	218	11	0	5,067	8	11
VII. Forest work, ...	0	0	0	1,664	7	7	219	7	1	349	0	0	2,232	14	8
VIII. Forest survey, ...	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
IX. Experiments on timber,	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
X. Communications and buildings, ...	0	0	0	14,080	6	3	9,049	2	0	1,973	11	7	25,103	3	10
Total Conservancy and Working,	3,038	15	2	1,08,514	14	9	34,661	1	1	4,963	5	10	1,51,178	4	10
ESTABLISHMENT.															
I. Salaries, ...	9,789	9	3	15,848	9	3	8,716	13	0	1,779	3	8	36,134	3	2
II. Allowances, ...	1,921	12	7	5,015	3	2	1,424	15	10	355	11	9	8,717	11	4
III. Contingencies, ...	907	3	8	1,612	14	10	637	1	2	246	13	11	3,404	1	7
Total Establishment, ..	12,618	9	6	22,476	11	3	10,778	14	0	2,381	13	4	48,256	0	1
Grand Total Expenditure, ..	15,657	8	8	1,30,991	10	0	45,439	15	1	7,345	3	2	1,99,434	4	11

Lucknow:
The 18th May 1874.

E. WOOD, CAPTAIN,
Conservator of Forests, Oudh.

No. 22.

FOREST DEPARTMENT, OUDH.

Dr. ANNUAL ABSTRACT ACCOUNT OF THE CASH TRANSACTIONS OF THE FOREST DEPARTMENT, IN THE YEAR 1873-74. **Cr.**

Year.	Heads of account.	Rs.	As.	P.	Year.	Heads of account.	Rs.	As.	P.
1873-74.	To Cash Balance in hand on 1st April 1873, ...	25,551	8	8	1873-74.	By Expenditure of the Department,—			
	„ Revenue received, ...	3,03,181	4	6		A.—Conservancy and Working, ...	1,51,178	4	10
	„ Remittances from Public Treasuries, ...	2,12,637	7	10		B.—Establishment, ...	48,256	0	1
	„ Advances recovered,...	1,71,196	9	5		TOTAL, ...	1,99,434	4	11
	„ Deposits received, ...	5,940	7	11		„ Remittances to Public Treasuries, ...	1,96,803	5	10
	„ Subscription and fees to Uncovenanted Civil Service Family Pension Fund, ...	191	5	0		„ Book Transfers, Department Public Works, ...	81,828	15	3
	„ Military Fund Madras &c., donations and subscriptions, ...	190	7	8		„ Ditto ditto, Ordnance Department, ...	35,550	7	0
	„ Recovery of advance made by Bombay Government,	750	0	0		„ Advances made, ...	1,48,236	3	4
	„ Transfer from Public Works Department Nowgong Division, ...	17,894	1	2		„ Objectionable items not included under expenditure, ...	8,894	11	0
	GOVERNMENT OF INDIA.					„ Refund of Revenue, ...	19,519	0	11
	„ Freight on stores from London, ...	125	8	6		„ Deposits repaid, ...	4,820	12	5
	„ Value of medicines supplied by Military Department,	71	6	8		„ Office rent at debit of Provincial Budget, ...	417	0	0
	GOVERNMENT OF BOMBAY.						6,95,504	12	8
	Amount paid to Mr. J. Downes, Engineer, Oudh Forests, at Bombay, on account of 2nd Class Railway fare from Bombay to Lucknow, ...	48	3	0		Cash Balance on 31st March 1874, ...	42,273	9	8
	TOTAL RS., ...	7,37,778	6	4		TOTAL RS., ...	7,37,778	6	4

LUCKNOW:
The 18th May 1874.

E. WOOD, CAPTAIN,
Conservator of Forests, Oudh.

No. 23.

FOREST DEPARTMENT, OUDH.

ANNUAL STATEMENT OF OUTSTANDINGS AND LIABILITIES OF THE DEPARTMENT ON ACCOUNT OF CONTRACTORS AND DISBURSERS.

	Value of Timber stock.						Rs.	As.	P.
At and on road to Srinagar Ghát on the Sarda,	Sál Logs,	2 @ 40	cubic feet	@	0 2 0	per cubic foot,...	10	0	0
In Soheli in transit,	ditto,	27 @ 40	„	@	0 4 0	per „ ...	270	0	0
Soheli depôts,	ditto,	5,244 @ 40	„	@	0 8 0	per „ ...	1,04,880	0	0
Ditto ditto,	Arseyna and Huldoo,	1,602 @ 40	„	@	0 4 0	per „ ...	16,020	0	0
Shitaba Ghát depôt,	ditto ditto,	97 @ 40	„	@	0 5 0	per „ ...	1,212	8	0
Byram Ghát ditto,	Sál Logs	175 @ 40	„	@	1 0 0	per „ ...	7,000	0	0
	Total Logs,	7,147							
	LOG PIECES SLEEPER SIZE.								
Soheli depôt,	Sál,	931 @ 15	cubic feet	@	0 8 0	per cubic foot ...	6,982	8	0
Ditto,	Asna and Huldoo,	190 @ 15	„	@	0 4 0	per „ ...	712	8	0
	Total Log pieces,	1,121							
Canoes for rafting purposes, in Kheri Division,		544		@	40 0 0	each, ...	21,760	0	0
Ditto ditto, in Bharaich Division,		659		@	40 0 0	„ ...	26,360	0	0
Large boats, in Kheri Division,		25		@	350 0 0	„ ...	19,750	0	0
Ditto ditto,		22		@	500 0 0	„ ...			
Firewood,	Maunds,	2,72,892,	40,000 maunds	@	nothing paid, ...	...	0	0	0
			59,892 „	@	19 0 0	per 100 maunds,...	11,379	7	8
			1,73,000 „	@	9 8 0	per „ „ ...	16,435	0	0
						Total, ...	2,32,771	15	8

No. 23.—(*Continued.*)

Divisions.	Department Debtor.			Department Creditor.			Balance due.	
	At commencement of year.	Recoveries in cash and value of supplies and work done during year.	At close of year.	At commencement of year.	Payments made during year.	At close of year.	To Department (Outstandings.)	By Department (Liabilities.)
KHERI.								
OUTSTANDINGS ON ACCOUNT OF SALES.	Rs. As. P.	Rs. As. P.	Rs. As. P.	Rs. As. P.	Rs. As. P.	Rs. As. P.	Rs. As. P.	Rs. As. P.
Mohesh Chunder, Timber Merchant, ...	0 0 0	0 0 0	0 0 0	2,400 0 0	0 0 0	2,400 0 0	2,400 0 0	0 0 0
Deputy Commissioner, Kheri, ...	753 4 9	0 0 0	753 4 9	0 0 0	0 0 0	0 0 0	0 0 0	753 4 9
Executive Engineer, Sitapur Provincial Division, Public Works Department, ..	7,491 11 5	15,897 9 0	23,389 4 5	0 0 0	12,030 0 10	12,030 0 10	0 0 0	11,359 3 7
Purchasers of timber, ...	0 0 0	1,07,481 13 11	1,07,481 13 11	0 0 0	1,11,133 7 11	1,11,133 7 11	3,699 0 7	47 6 7
Oudh & Rohilkund Railway Company (fire-wood,)	0 0 0	313 4 11	313 4 11	0 0 0	21,141 4 9	21,141 4 9	20,827 15 10	0 0 0
Total, ...	8,245 0 2	1,23,692 11 10	1,31,937 12 0	2,400 0 0	1,44,304 13 6	1,46,704 13 6	26,927 0 5	12,159 14 11
EXCESS PAYMENTS TO CONTRACTORS.								
Kheri Division, Old account, ...	0 0 0	54 0 1	54 0 1	20,040 12 11	0 0 0	20,040 12 11	19,986 12 10	0 0 0
New ditto, (carters), ..	39 9 7	14,768 8 8	14,808 2 3	9,813 12 2	15,252 13 5	25,066 9 7	10,260 14 4	2 7 0
Ditto, (rafting contractors),	20 0 0	293 12 0	313 12 0	6,708 2 8	80 0 0	6,788 2 8	6,494 6 8	20 0 0
Ditto, (other contractors), ..	0 0 0	30,174 11 1	30,174 11 1	1,403 3 0	30,300 0 0	31,703 3 0	1,528 7 11	0 0 0
Total, ...	59 9 7	45,290 15 10	45,350 9 5	37,965 14 9	45,632 13 5	83,598 12 2	38,270 9 9	22 7 0
ADVANCES TO FOREST SUBORDINATES FOR WORKS.								
Direction, ...	0 0 0	1,127 12 3	1,127 12 3	232 10 0	1,055 5 3	1,287 15 3	160 3 0	0 0 0
Kheri Division, ...	2 4 6	77,141 15 6	77,144 4 0	8,487 0 4	74,759 10 3	83,246 10 7	6,105 0 1	2 9 6
Bharaich ditto, ...	0 0 0	74,044 12 7	74,044 12 7	6,127 0 2	68,566 4 0	74,693 4 2	648 7 7	0 0 0
Gonda ditto, ...	1 0 7	18,882 1 1	18,883 1 8	6,209 11 3	12,749 10 10	18,959 6 1	128 5 9	52 1 4
Total, ...	3 5 1	1,71,196 9 5	1,71,199 14 6	21,056 5 9	1,57,130 14 4	1,78,187 4 1	7,042 0 5	54 10 10
Total Outstandings and Liabilities, ..	..	..	..	..	..	..	72,239 10 7	12,237 0 9

E. WOOD, CAPTAIN,

Conservator of Forests, Oudh.

No. 24.

FOREST DEPARTMENT, OUDH.

STATEMENT OF TIMBER BROUGHT TO DEPOTS FROM THE DIFFERENT FOREST DIVISIONS DURING 1873-74.

Name of river or Division.	Forest.	Description of timber.	Pieces.	Cubic feet.	Total of each Division.		Remarks.
					Pieces.	Cubic feet.	
Kheri Division,	Kheri Forests,	Sál logs and a few Asna and Huldoo.	3,668	146,720′			
Ditto,	Ditto,	Ditto, sleeper size.	527	7,905′	4,195	154,625′	
Ditto;	Ditto,	Firewood,	Maunds,	318,743	Maunds,	318,743	
Ditto,	Ditto,	Miscellaneous Bullees,	324	1,620′	324	1,620′	

E. WOOD, CAPTAIN,

Conservator of Forests, Oudh.

No. 25.

FOREST DEPARTMENT, OUDH.

ANNUAL TIMBER ACCOUNT FOR THE YEAR 1873-74.

Particulars.	Pieces.	Total.
I.—Stock in hand at the following Depôts at the commencement of the year:—		
At Shahjehanpur Depôt, ...	2	
Sardah river, On road between Suthiana and Srinagar,	1	
Sardah river, At Srinagar Ghát, ...	1	
Sardah river, In transit to Byrámghát, ...	47	
Soheli river, At Suthiana, Depôt, ...	4,709	
Soheli river, „ Duduaghát do., ...	461	
Soheli river, „ Bundeeghát do., ...	69	
Soheli river, „ Tirhiaghát do., ...	931	
Soheli river, In Transit to Byrámghát, ...	455	
At Shitabaghát Depôt, ...	175	
„ Byrámghát do., ...	1,594	8,445
II.—Timber received at Depôts from the forests, Logs, Sál, Asna and Huldoo, ...	3,668	
Timber received at Depôts from the forests Logs pieces, sleeper size, ...	527	4,195
		12,640
I.—Stock in hand:—	Sál sleepers.	
At Puchperry Ghát, ...	192	
II.—Timber received at Depôts, ...	...	192
I.—Stock in hand:—	Firewood.	
Maunds, ...	65,419	
II.—Firewood received at Depôts, „	3,18,743	3,84,162
	Miscellaneous Bullees.	
I.—Stock in hand:—		
II.—Timber received at Depôts, ...	324	324
Total Pieces, ... Sál, Asna and Huldoo logs,		12,640
Sál sleepers,		192
Firewood in Maunds,		3,84,162
Miscellaneous Bullees,		324

Particulars.	Sál.	Arseyna.	Huldoo.	Pieces.	Total.
I.—Timber removed by purchasers from Depôts, ...	...	...	...	2,601⅓	2,601⅓
II.—Timber lost:— In Sarda river, ...	...	...	...	5	
„ Soheli do., ...	...	...	...	441	
Made over to Bhola in Settlement of claim,	...	...	...	2	
Used in erecting Saw Machinery, ...	...	...	...	169	
„ in making up large Boats, ...	...	...	...	1,057⅔	
„ in making Departmental carts, ...	...	...	...	28	
„ in constructing bridge on the Soheli at Dudua, ...	...	...	...	2	
„ in constructing a plough for river work, ...	...	...	...	3	
„ in making up curbs for wells, ...	...	...	...	8	
Sawn up for building forest chokie at Kheri,	...	...	...	55	1,770⅔
III.—Stock in hand at close of the year at the following Depôts:—					
Logs. Sardah Depôts, On road between Suthiana and Srinagar,	1	...	...	1	
Logs. Sardah Depôts, At Srinagar Ghát, ...	1	...	...	1	
Logs. Sardah Depôts, In transit to Byrámghát, ...	...	...	...	...	
Logs. Soheli „ „ At Suthiana Depôt, ...	4,810	1,132	70	6,012	
Logs. Soheli „ „ „ Duduaghát do., ...	102	118	2	222	
Logs. Soheli „ „ „ Bundeeghát do., ...	...	64	...	64	
Logs. Soheli „ „ „ Tirhiaghát do., ...	332	208	8	548	
Logs. Soheli „ „ In transit to Byrámghát, ...	27	...	...	27	
Logs. Soheli „ „ At Shitabaghát Depôt, ...	...	93	4	97	
Logs. Soheli „ „ „ Byrámghát do., ...	175	...	...	175	
				7,147	
Pieces. Soheli Depôts, At Suthiana Depôt, ...	817	60	2	879	
Pieces. Soheli Depôts, „ Duduaghát do.,... ...	2	...	...	2	
Pieces. Soheli Depôts, „ Tirhiaghát, do.,... ...	112	128	...	240	
				1,121	8,268
				Sál sleepers.	12,640
I.—Timber removed by purchasers, ...	...	...	...	...	
II.—Timber lost used on Puchperry ferry, ...	...	...	...	192	
III.—Stock in hand, ...	...	...	...	...	192
				Firewood.	
I.—Firewood delivered to the Oudh and Rohilkund Railway Company, ...	Maunds,			1,11,270	
II.—Firewood lost, ...	...	...	...	...	
III.—Stock in hand, ...	...	...	...	2,72,892	3,84,162
				Miscell. Bullees.	
I.—Timber removed by purchasers, ...	...	...	...	324	
II.—Timber lost, ...	...	...	...	...	
III.—Stock in hand, ...	...	...	...	...	324
Total Pieces, ...	5,448	1,615	84	Sál, Asna & Huldoo logs,	12,640
	931	188	2	Sál sleepers, ...	192
	...	...	...	Firewood in Maunds, ...	3,84,162
	...	...	...	Miscellaneous Bullees,	324

E. WOOD, CAPTAIN,
Conservator of Forests, Oudh.

No. 26.

FOREST DEPARTMENT, OUDH.

STATEMENT SHOWING THE AMOUNT REALIZED ON ACCOUNT OF THE DIFFERENT CLASSES OF TIMBER SOLD DURING 1873-74.

Divisions.	Number of Logs, &c. sold.	Cubical contents.	Amount realized and due on account of timber sold.	Average amount per log.	Average cubical contents of each.	Average amount per 100 cubic feet.	Remarks.
KHERI.		Cubic feet.	Rs. As. P.	Rs. As. P.	Cubic feet.	Rs. As. P.	Pieces.
By public auction sale, Byramghát depôt, ... Logs,	1,430	64,368 11 6	86,154 3 4	60 3 11	45 0 0	133 14 0	Timber sold in previous years remaining unremoved at the commencement of the year, ... 116
,, private sale, do. do., ...	437⅓	20,348 6 0	13,635 7 10	31 2 10	46 6 5	67 0 1	Timber sold during the year, ... 2,601⅓
Sales by selection, do. do., ...	252	10,881 9 3	11,491 5 4	45 9 7	43 2 2	105 9 7	Total, ... 2,717⅓
Sale by selection, Tirhiaghát depôt, ...	20	881 5 9	661 2 0	33 0 10	44 0 10	75 0 0	Timber remaining unremoved at the close of the year, ... 116
Sale by selection, Shitabaghát do., ...	436	10,083 8 3	10,278 14 10	23 9 2	23 1 3	102 0 5	
By private sale, do. do., ...	26	1,258 10 0	834 5 5	32 1 5	48 5 0	66 4 5	Balance removed from depôts by purchasers during the year, ... 2,601⅓
Miscellaneous Bullees, Byramghát depôt, ... Bullees,	324	1,620 0 0	108 2 0	0 5 4	5 0 0	6 10 9	
Fuel to Oudh and Rohilkund Railway Company, ... Firewood,	111,270	maunds.	21,141 4 9	3 4 0	per maund.	19 0 0	
Excess payments, received from purchasers of timber, ...	...	...	3,914 14 9	0 0 0	...	...	
Logs, ...	2,601⅓						
Miscellaneous Bullees, ...	324						
Firewood, ...	111,270 maunds.		1,48,219 12 3				
Deduct amount due but not realized during the year, ...			24,527 0 5				
Balance, ...			1,23,692 11 10				
Add amount realized on account of former years, ...			32,989 4 7				
Total shown as revenue on account of timber sales, ...			1,56,682 0 5				

E. WOOD, CAPTAIN,

Conservator of Forests, Oudh.

No. 27.

FOREST DEPARTMENT, OUDH.

STATEMENT SHOWING THE AMOUNT EXPENDED ON ACCOUNT OF TIMBER RECEIVED FROM THE DIFFERENT FOREST DIVISIONS DURING 1873-74.

Name of Division.	No. of logs &c.	Cubical contents.	Timber expenses.	Add ¾ths. of the expenditure under the other Budget Heads.*	Total amount expended.	Average amount paid per log &c.	Average cubical contents per log &c.	Average amount paid per 100 cubic feet.	Remarks.
	Logs &c.	Cubic feet.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Cubic ft.	Rs. A. P.	
KHERI DIVISION.									
Felling, logging and carting logs from forests to depôts,	3,668	1,46,720	18,340 0 0	49,642 0 0	67,982 0 0	18 8 7	40	46 5 6	Our average rate is for felling, ... 0 12 0 per log. Carting to forest depôt, ... 4 4 0 „ „ Making a cost of, ... Rs. 5 0 0 „ „ or 0 2 0 per cubic foot.
Do. do. sleeper size pieces,	527	7,905	1,000 0 0	2,706 0 0	3,706 0 0	7 0 6	15	46 14 0	
Cutting, collecting, carting and rafting firewood from forests, ...	Maunds. 3,18,743	...	41,806 0 0	...	41,806 0 0	2 1 0	per maund.	13 1 10	We then raft to Byramghat for about, ... Rs. 7 0 0 per log. So that with landing and depôt charges our logs cost at Byramghat about, ... Rs. 14 0 0 „ „ or about 0 8 0 per cubic foot.
Miscellaneous bullees, ...	324	1,620	...	...	...	...	5	...	
Add ½ of direction charges,†	...	...	...	...	8,000 0 0	...	...	...	
Grand Total, ...	...	...	61,146 0 0	52,348 0 0	1,21,494 0 0	...	...	...	

* ¾ths of the expenditure under other Budget heads (Kheri Division) is added because the proportion of revenue under I, to the revenue under the other heads is as 3 : 1 nearly.

† The total receipts are to receipts under head I, as 2 : 1 nearly.

E. WOOD, CAPTAIN,

Conservator of Forests, Oudh.

No. 28.

FOREST DEPARTMENT, OUDH.

ANNUAL ACCOUNT OF FOREST REVENUE FOR THE YEAR 1873-74.

Receipts.			Amount. Rs.	As.	P.	Disbursements.			Amount. Rs.	As	P.
Amount of revenue realized in 1873-74,..			3,03,181	4	6	Amount disbursed in 1873-74, ...			1,99,434	4	11
DEDUCT :—						DEDUCT :—					
Amount realized on account of previous periods, ...			32,989	4	7	Amount disbursed on account of transactions of former periods, ..			0	0	0
Balance, ...			2,70,191	15	11	Balance, ...			1,99,434	4	11
ADD :—						ADD :—					
Outstandings on account of the year, ..	26,927	0 5				Amount due for transactions during the year under review, but not yet disbursed, ...			77	1	10
Deduct Liabilities, ...	12,159	14 11	14,767	1	6						
Value of the years' transactions,...			2,84,959	1	5	Real cost of the years' transactions, ...			1,99,511	6	9

Value of the year's transactions, ...	2,84,959	1	5
Cost of the year's transactions, ...	1,99,511	6	9
Balance, ...	85,447	10	8
(Add) difference between the value of stock at the commencement and close of the year,..	34,504	13	11
Net results of the year, ...	1,19,952	8	7
(Deduct) on account of cost of supplying deficiency of stock at the close of the year, ..	0	0	0
Net surplus of the year, ...	1,19,952	8	7

E. WOOD, CAPTAIN,
Conservator of Forests, Oudh.

Detailed list of Registration, Outstandings and other deductions on account of transactions during 1873-74, supplementary to Form No. 28.

Name of purchaser of timber.	Amount realized, &c.	Budget Head.	Remarks.
	Rs. As. P.		
Outstandings on account of timber sales.			
Mohesh Chunder, Timber Merchant, ...	2,400 0 0	I. 1.—(*a*)	Cannot get possession of the timber sold, though Decree is obtained, as Mohesh Chunder cannot be found.
Messrs. Glover and Company, (Agra), ...	141 3 6	...	Since realized.
Assistant Engineer (Sultánpur), ...	649 0 6		
Budree Dass, ...	144 13 0	...	Do. do.
Rughonath Panday, ...	0 8 0	...	Do. do.
Budree Dass, and Ramanooj, ...	1,519 12 3	...	Do. do.
District Engineer, Futtygurh, ...	1,243 11 4	...	Do. do.
	3,699 0 7		
Oudh and Rohilkund Railway Company, ...	20,827 15 10	...	Do. do.
Total, ...	26,927 0 5		
Liabilities on account of timber sales.			
Deputy Commissioner, Kheri, ...	753 4 9	...	Excess payment on account of timber, will be adjusted by the supply of timber of that value.
Executive Engineer, Sitapur Provincial Division, ...	11,359 3 7	...	Do. credit afforded in accounts by the Executive Engineer ; running account
Executive Engineer, Lucknow do. do., ...	10 15 0	...	Do. payment on account of timber adjusted.
Assistant Engineer, Bustee, North Western Provinces, ...	0 0 3	...	Do. payment on account of timber supplied, adjusted.
Superintendent Jail, Bustee, do. do., ...	0 2 0	...	Do. do. do. do. adjusted.
Oudh and Rohilkund Railway Company, Lucknow, ...	23 13 4	...	Do. payment on account of do., will be adjusted by supplying timber.
Dhunnee, purchaser of timber, ...	12 8 0	...	Do. payment, since refunded.
Total, ...	12,159 14 11		

E. WOOD, Captain,

Conservator of Forests, Oudh.

Detailed list of amount due for transactions during the year 1873-74, but not yet disbursed, supplementary to Statement No. 28.

Name of contractor or disburser.	Amount due.	Budget Head.	Remarks.
	Rs. As. P.		
CARTERS, KHERI DIVISION.			
Toorreybaz Khan, son of Husrutnoor Khan, ...	2 7 0	AI. 1 (*a*)	Excess value of work done.
RAFTING CONTRACTORS, KHERI DIVISION.			
Dyaram Gooria, ...	20 0 0	AI. 1 (*a*.)	Ditto ditto.
Total, ...	22 7 0		
KHERI DIVISION.			
FOREST SUBORDINATES.			
Bainee Pershad, (late Darogha,)	2 0 6	...	Excess recovery.
Budree Pershad, (do. do,)	0 4 0	...	Ditto.
Anny Lal, (do. do.,)	0 5 0	...	Ditto.
GONDA DIVISION.			
Chirunji Lal, (office clerk,)	51 0 9	...	Ditto.
Mookut Biharee Lal, ...	1 0 7	...	Ditto.
Total, ...	52 1 4		
Grand Total, ...	77 1 10		

E. WOOD, CAPTAIN,

Conservator of Forests, Oudh.

Minute by the Chief Commissioner on the Oudh Forest Progress Report for 1873-74.

PARAS. 3 AND 4.—The representations of the Conservator regarding the failure to attain their object of the arrangements made in 1871 with the Mahárájah of Balrampur are receiving the fullest consideration. It must not be supposed that the 46½ square miles of grass, scrub, and forest land were given to the Mahárájah solely in commutation of the claims of his tenantry to graze their cattle and obtain their wood from the forests. About 20 square miles were assigned to him on account of a deficiency in the waste attached to his villages at demarcation, as compared with what they should have received under the instructions given by Mr. Wingfield, when Chief Commissioner. The remainder was given in exchange for land which had either been taken from the Máharájah, or which, from its position within the line of the reserved forests, it was desirable to acquire for the Forest Department. The understanding certainly was that the forests should be freed for ever from claims by the Mahárájah and his tenantry for grazing and a free wood supply; and it was hoped that in this tract it would be possible to introduce strict conservancy.

2. PARA. 5.—With reference to the suggestion of the Government of India, that depôts be established for the sale of cheap forest produce, the Conservator has explained that 14 depôts exist at, or near the forest, which can amply supply the wants of those living in the vicinity, and that the demand in places remote from the forest is sufficiently met by traders who take out quantities of wood for sale. But at these depôts the wood has been hitherto sold in the log, whereas a main feature of the scheme of the Government of the North-West Provinces, to which the Supreme Government called attention, was to supply ready prepared scantlings of sizes ordinarily in demand. This course the Conservator, who has now got a saw-mill in good working order, proposes to adopt in connection with a revised working plan to be shortly submitted.

3. PARAS. 6 TO 10.—This section of the report is a melancholy record of the continued failure of the department to preserve the forests from the ravages of fire. The subject is, no doubt, beset with very great difficulties, and it may be admitted that, under existing circumstances, it is not possible to secure to the forests complete immunity from this devastating element; but the Chief Commissioner hopes that these occurrences will not be accepted as a matter of course, and that the Conservator will spare no exertion to diminish the number of fires, and to prevent their extension. The Government of India has said that it is prepared to sanction any moderate and well considered expenditure for this important object. If a fire-path 15 feet broad is not a sufficient protection, it is possible to widen it, and this or some other more suitable measure should be adopted without delay, especially around the valuable plantations of sissú, which it is so important to preserve and extend. The scheme promised in para. 8 should be submitted as soon as possible.

4. The result of the trial of forest cases (Appendix II and last statement of Appendix III) is generally creditable to the judgment of those who instituted the prosecutions. But it is not understood why Ooree Ahír was proceeded against for "sitting under" a tikoee tree. His fate is uncertain, for, whereas in Appendix II he is said to have been released, from Appendix III it would seem that in all cases not pending convictions were obtained.

5. PARAS. 11 TO 26 treat of the present and the proposed systems of timber operations. Under the plan approved in 1867-68, only some 2,900 selected first-class trees of the reserved kinds (sál, asná, and haldú) are felled every year, and this only in the Kheri Division. In addition, windfalls and dead sál trees are sold to contractors and others, who are also allowed to purchase, fell, and remove trees of the unreserved kinds. The details of the proposed modifications of this plan have not yet been submitted; but it is advocated on the ground that in felling first class timber we can, without injury to the forests, work on a rotation of twenty instead of forty years; and that we shall improve the quality of the forest by making considerable clearances, in some cases complete, and in others of large crooked and hollow trees. The main features of the plan then are: that about double the number of sound first-class trees be felled; that, besides this, not only in the Kheri but in the Bharaich Division, crooked and hollow trees of the reserved kinds be taken out and cut up into scantlings or fuel, as may be suitable; and that in parts where there is a good stock of seedlings, the land be taken up by blocks, everything but the young seedlings cut over flush with the ground, and thereafter the block rigorously protected from fire and cattle-trespass. To judge of the propriety of all these proposals requires a knowledge of arboriculture which the Chief Commissioner does not possess, and they must be submitted to the professional criticism of the Inspector General before they are recommended to the Supreme Government for adoption; but it seems to the Chief Commissioner to be a sound measure to clear out and utilize those trees which cumber the ground and can never become first-class timber, and thus make room for a finer young growth. With the sawing machinery now at his disposal, the Conservator should be able to convert this timber, as well as much of what is now sold in the rough to dealers, into scantlings which will find a ready and profitable sale, and to supply fuel at less cost than under the arrangements described in the 36th para. of his report.

6. PARA. 27.—It is important that the plantations, particularly those containing sissú, which timber, as the Conservator elsewhere remarks, there is no prospect of replacing by natural reproduction, be carefully tended. In last year's report Captain Stenhouse anticipated that the trees felled by the Gun Carriage Agency would be more than replaced from these plantations. Proposals for some increase to the present establishments have been taken into consideration, and the Conservator may find it possible to overcome some of the difficulties in the way of thorough conservancy by decreasing the number and enlarging the area of his plantations.

7. PARA. 28.—The selling of standing sál trees is an experiment not likely to be repeated. Sissú trees have been sold standing only to the Gun Carriage Agency at Fattehgarh to meet an urgent demand on the part of Government. The Conservator does not speak of any modification of the practice of selling standing timber of other kinds, but the expressed desire of the Government of India for its gradual abandonment should be borne in mind.

8. PARA. 29.—The Conservator will doubtless see that the necessary operations with regard to creeper-cutting are undertaken during the coming working season.

9. PARAS. 30 TO 33.—It is satisfactory to learn that the land communications to and about the forests are so much improved. The more complete opening out of the Soheli route for purposes of navigation is an important question which may be advantageously discussed with Dr. Brandis on his approaching visit to the Province, as the propriety of incurring expenditure for this purpose must depend on the site and extent of future timber operations.

10. The assistance afforded by officers of the Forest Department in carrying out measures for the relief of the people in the famine-stricken tracts bordering on the forest has been elsewhere acknowledged. It is satisfactory to have the assurance of the Conservator that the roads constructed under these circumstances will be of great use.

11. Information regarding the state of the resumed grants in Kheri and Hardui, and the prospect of utilizing them for forest purposes, would have been interesting.

12. The Chief Commissioner would have been glad to hear what has been done towards promoting the cultivation of bamboo.

13. PARAS. 35 TO 38.—The operations for supplying fuel to the Oudh and Rohilkhund Railway Company have not been so successful as was anticipated. In this, the first attempt to execute a large contract for the supply of fuel, the manifold difficulties to be overcome were not fully appreciated, and some of them were of a special nature which could not have been foreseen. During the period within which it was hoped that five lakhs of maunds of wood would be delivered, only 1,17,000 maunds were made over, but the work is still going on. The operations, as conducted, have not been remunerative to the department, and, though it is likely that they will be completed without any actual loss, it will be necessary to make them less expensive if they are to be continued; for it is understood that the Railway Company is not disposed to enter into any new engagement to receive fuel at the present price (Rs. 19 per 100 maunds). At present the Company appears to prefer to obtain what it requires from private sources, and though there is little reason to doubt that it will, in time, be compelled to fall back on the Government forests for its supplies, unless it substitutes coal for wood fuel, its demands are, in the meanwhile, a heavy drain on the mango groves in the vicinity of the line of railway, and it is very necessary to take decided steps to avert the threatened denudation.

14. PARAS. 40 to 46.—The financial results of the year have been satisfactory, showing a surplus of Rs. 1,03,747. But the net surplus, which is obtained by deducting the cost of the operations of the year from the value of the year's transactions, including the value of increased stock in hand at the end of the year, is no less than Rs. 1,19,952, as compared with Rs. 86,418 in 1872-73. There were special causes to account for the larger surplus in 1873-74, and, under the present plan of operations, the normal surplus is not likely to reach so high a figure; it is estimated at only Rs. 76,100 for 1874-75. But there is doubtless room for considerable remunerative extension of operations, and the Conservator's proposals in this direction will receive favorable consideration.

15. PARA. 59.—The Chief Commissioner regrets to see the large sum of Rs. 23,769 still shown in the accounts as due by old contractors. It has been represented that this amount is really irrecoverable and should be struck off; but the information required to enable the Chief Commissioner to determine whether this explanation is a sufficient one has not yet been furnished, and the Conservator is requested to expedite its submission.

(Signed),

GEORGE COUPER,

Chief Commissioner of Oudh.

No. 95, dated the 27th January 1875.

From—G. H. M. BATTEN, Esq., *Officiating Secretary to the Government of India,*
To—*The Chief Commissioner of Oudh.*

I AM directed to acknowledge the receipt of your letter No. 3699, dated 24th October last, forwarding the annual report of the Forest Department in Oudh for 1873-74, and to communicate the following observations and orders of the Government of India.

This is the second year which has given a fair surplus* from the management of the Oudh forests, and His Excellency in Council trusts that similar results will now be regularly attained. This can, it is hoped, be effected by good management and strict economy, and by making the most of the small yield of material which these forests in their present state can furnish.

	Receipts.	Charges.	Surplus.
	Rs.	Rs.	Rs.
* 1872-73 ...	2,96,258	1,43,420	1,58,838
1873-74 ...	3,03,181	1,99,434	1,03,747

2. The report contains no evidence of material improvement in the condition of these Government estates.

The Conservator reports that the forests have been burnt much as usual in spite of the indefatigable exertions of his assistants. The failure in this respect may partl ybe due to the insufficient width of protection lines, but according to all previous reports the real difficulty appears to be that cattle are permitted to graze in all the Oudh forests. The experience which has now been acquired in the management of sâl forests, not in Oudh only but equally so in other provinces, has shown conclusively that where cattle are admitted fires cannot be excluded. His Excellency in Council observes that Rs. 27,327 were realized during the year under review as grazing dues, and similar amounts were entered in the accounts of previous years. This sum, it is true, increases the cash surplus, but it does so at the cost of the maintenance and improvement of the forests.

3. His Excellency the Governor General in Council desires that the question may now seriously be considered how to exclude cattle from a portion at least of the Government forests in Oudh. The subject is beset with difficulties, but it has repeatedly been discussed, and it ought now to be possible to devise a solution which will secure the protection of the forests, without injury to the customary rights and privileges of the people.

4. In paragraph 28 of his report for 1872-73 Captain Stenhouse, the late Officiating Conservator, expressed an opinion that by the infliction of very severe punishments for setting fire to a Government forest this destructive practice might be put a stop to, and that thus the exclusion of oxen and cows might be rendered unnecessary except in the case of young plantations. If such were possible, this doubtless would, as Captain Stenhouse suggests, be a great boon to the people. But His Excellency in Council apprehends that the difficulty of detection and conviction would render this plan impracticable. Firing the grass in order to produce a crop of tender shoots is a custom which herdsmen are not likely to abandon. The only punishment likely to be effective would be to close against all cattle every forest which had been fired, and such a measure would only be admissible in forest tracts where no rights or privileges of pasture exist.

5. In last year's report (paragraphs 13 to 15) the resumed grants in the Kheri and Hardui districts, which have been made over to the Forest Department, were noted, and Captain Stenhouse stated that the villagers in the vicinity were not allowed any forest privileges where the grants were given to the grantees. If this view of the case is correct, and if Government is now the unrestricted owner of those lands, then arrangements should at once be made to keep out fires. From certain blocks cattle should be excluded altogether, and the grazing in the remainder should be let annually by well-defined blocks, on the distinct understanding that on the breaking out of a fire

in any block the same would at once be closed. Similar arrangements might be made in such portions of the Gonda forests as are free of grazing rights.

6. In the great mass of the Oudh forests, however, His Excellency in Council is aware from previous correspondence that matters are different. The entire question of the existence or non-existence of prescriptive rights in those domains was fully discussed as long ago as November 1868, in paragraphs 8 to 15 of the orders on the report for 1867-68, and it will here be sufficient to refer to that communication and to the suggestion then made to entrust the arrangements for the settlement of these rights and privileges to a special commission consisting of an officer of the Revenue and one of the Forest Department.

I am directed again to invite your attention to that suggestion, and to say that, if you should decide to depute a Revenue officer of experience to undertake this duty in communication with the officers of the Forest Department, His Excellency in Council will gladly sanction such an arrangement.

7. It will not be possible, His Excellency in Council supposes, to clear the forests of grazing rights and privileges without giving up a considerable portion of the forest area, but if the remaining area is protected from fire its productiveness will increase rapidly, and whatever marketable timber it may contain may be utilized more rapidly, thereby making room for young growth. An essential condition is that the blocks remaining at the disposal of Government should be of as large extent and compact shape as possible.

8. The Conservator of Forests mentions a system of entire clearances in the sál forests, which he recommends should be substituted for the present system of thinning out a proportion of the marketable trees. Under this system he anticipates a considerably increased yield in material, but he justly adds that the blocks thus cleared must be guarded from fires and cattle. Under existing conditions it may be practicable to fence in small areas and thus to exclude fires and cattle. It is not, however, the cuttings of one year only, but of all successive years, which must be protected until the cover overhead is so dense that comparatively little damage is done by the fires. And if it is intended to effect the improvement of the soil by the formation of leaf-mould, then fires must be excluded always.

9. What the Conservator says clearly indicates that he recognizes the larger yield of a forest which is protected from fire, and this is the great advantage of the measures persistently advocated by the Government of India ever since 1868, that a diminished area of forest land, if under complete control, may produce a larger yield of material and revenue than the present area under existing conditions.

But Captain Wood's plan, if correctly understood, will necessitate the closing gradually of the whole of the forests, or at least of a considerable portion, and before this can be attempted, the settlement of the grazing rights and privileges must be effected.

10. Meanwhile, I am directed to approve your intention to consult the Inspector-General of Forests, before submitting to the Government of India any proposal to increase the number of trees to be felled.

11. The statements appended to the report are not throughout prepared with care. That of outstandings and liabilities on account of sales closed last year with Rs. 35,389 in favour of, and Rs. 26,080 against the Department. This year's statement opens with Rs. 2,400 in favour of, and Rs. 8,245 against the Department. This discrepancy should be explained. In the area statement of forest tracts protected from fire, 160,000 acres are said to have been protected in 1872-73 in the Bharaich and Gonda divisions. This is not correct; last year's statement closed blank, the area in question it seems was protected in 1871-72. The area statement of unreserved forests being blank, may be omitted. The entries in the timber accounts (statements 24 to 27) are not understood, and it seems to His Excellency in Council that the timber transactions of Oudh might be more conveniently shewn by the adoption of other forms. On reference to the original forms which were circulated by the Government of India in 1866, the Conservator will observe that the present forms were only *suggested*, not *prescribed*. Timber accounts must be kept in forms adapted to the local requirements of each province, and the Conservator is at liberty to modify them according to the nature of his timber transactions. With the next annual report for the Oudh forests the Government

of India expects to see a set of simple and intelligible statements, giving the following information :—

1*st*. Quantity and value of stock in hand at depôts at the commencement and close of the year.

2*nd*. Quantity of timber brought to depôts during the year, and amount expended on account of and chargeable to the same.

3*rd*. Quantity of timber disposed of during the year, and amounts realized on that account.

An annual timber account, balancing incomings and outgoings of timber during the year, is also requisite.

12. The value of the timber in hand at the close of the year is entered as Rs. 2,32,771 against Rs. 1,98,267 at the close of 1872-73. These figures seem under present arrangements to be open to much uncertainty. Only such timber should be included in this return as has arrived at the depôt where it is to be sold. Timber at forest depôts or in transit should be excluded. In the case of the firewood, which is valued at Rs. 27,814, it is not even stated at what depôt it had been delivered. If the canoes and large boats valued at Rs. 67,870 are intended for sale, they may be included ; if however they are intended for departmental use, their value would find a place in an annual return of tools, stores, and live stock at the close of the year, the preparation of which, however, has not yet been contemplated by the Government of India.

Next year's valuation statement of timber in hand should contain an explanation of the amounts now ordered to be omitted.

No. 645 of 1874-75.

From

Captain J. C. DOVETON,

Conservator of Forests,

Central Provinces.

To

The SECRETARY to the CHIEF COMMISSIONER,

Central Provinces.

Dated Nagpur, the 20th June 1874.

Sir,

I have the honor to submit the Report on the Forest administration for the official year ending 31st March 1874.

FIRST PART SPECIAL.

Head I.—State and Leased Forests.

Section I.

Area, boundaries, &c.

2. A reference to prescribed Form No. I. (area of State forests) will show that the total area exhibited in 1873-74 exceeds that shown in the previous year by 33 square miles and 292·75 acres. This is partly owing to certain corrections being made on obtaining more accurate information regarding tracts not yet surveyed, and to the inclusion in the Statement for 1873-74 of the two blocks of forest in the Ahiri Zamindari, the purchase of which has been sanctioned by Government. The deed of sale of these latter forests has not yet been signed, but as they are at present under the management and control of this Department I have deemed it expedient to include them in the return.

3. Six sal bearing tracts selected in Mandla and Balaghat have also been added to the list, but as these tracts will shortly be surveyed these areas are omitted till accurate information is available. They are believed to contain about 220 square miles.

Demarcation of the Sal forests of Mandla and Balaghat.

4. The selection and demarcation of these forests was taken in hand almost simultaneously by Mr. Jacob, at the commencement of the current open season. Six separate blocks were selected, and of these five had at the close of the year been demarcated. This work entailed the cutting of 42 miles of boundary lines 45 feet wide, through high forest and over rough country, and the erection of 363 land marks on 144 $\frac{3}{4}$ miles of boundary. The land marks erected consist of stout posts of seasoned durable wood with a couple of tons of stone placed round each. To these posts a separate set of serial numbers for each block have been affixed and will be maintained. The marks themselves, though temporary, are reported to be sufficiently strong and substantial to last for five or six years, which will render an immediate expenditure on the construction of masonry pillars unnecessary. The cost of the work was Rs. 1,520-5-3 plus the pay of the Deputy Conservator for the four months he was engaged on it, or in all, Rs. 4,320-5-3.

5. An examination of the boundaries of the Satpura Reserve west of the Pench river showed that there is no pressing necessity for improvement of boundaries here. The line will have to be widened for protection from fire, and this is being gradually done as the Divisional Officer finds leisure to attend to the work, and it will be completed before it is required for keeping out fire. Thirty-five miles of this boundary was regularly cleared to a width of 40 feet, and a similar amount of work remains to be done in this portion of the reserve.

Satpura Reserve.

Section II.

Requirements of the population, &c.

6. Under this head should be given the increase or decrease in the consumption of produce of different kinds, this being the only key to an accurate knowledge of the requirements of the people. These requirements, as is well known, are chiefly for small building wood, wood for agricultural implements, bamboos and fuel, which can as yet be obtained from the Unreserved forests. For some of the Unreserved forests, records are available regarding the quantity of produce removed on permits, given for fixed quantities of material; but the bulk of the produce consumed is removed on permits granted for the year without reference to quantities. Until records of the actual quantities of produce taken, and of the proportion of the population whose wants such produce is to supply, have been kept for two or three years, the present requirements of the people cannot be accurately known, nor can their future requirements be correctly estimated. The matter is one of the greatest importance, as on such data alone can the area that it will be expedient for the State to retain as forest be determined.

7. As the State is at present supplying the bulk of the requirements of the people at nominal rates it may not be out of place to refer to the action of Malguzars with reference to forest conferred in proprietary right in Malguzari villages at the time of the Settlement. Of the exact conditions under which these forest lands were conferred, I am not fully informed, but I think I am right in assuming that they were intended for the benefit and use of communities to supply their wants and not of the headman in each village. In remote localities where the value of forest produce is low no doubt the villagers have the full benefit of these forests. Where the value of forest produce is high, however, the Malguzars are in many cases clearing out their village forests as fast as they can and converting the stock into money, while in many others they have closed their forests entirely, in the hope it is believed of securing a monopoly in the future. These latter cases are I believe at present chiefly confined to the Jabalpur district.

8. Much has been said and written at different times regarding the necessity of supplying the forest requirements of the people on easy terms. The importance of this must be appreciated by every intelligent officer, but no data for the whole Province is available to admit of general enquiry as to whether the bulk of the population now pay more for forest produce than they did in former years, and if so, whether the rise in price is out of proportion to the rise in the value of other produce. It may, however, be noted with reference to the Hoshangabad district, that Mr. C. A. Elliott, in the calculations given in his Settlement report (page 106 A) written in the early part of 1865, puts down the amount paid annually by cultivators for wood for one plough at about Rs. 2. At that time the excess waste lands had only just come under direct management, and it is more than probable that Mr Elliott's information was obtained prior to these lands being declared excess waste. In the present day the cultivator can supply himself with small wood, fuel, and grass for one year from the Government forests on payment of one rupee. Even prior to my joining the Forest

Department, I had numerous opportunities of seeing how the people of the plain supplied their forest requirements. To the best of my recollection the rates charged were Rs. 1 per cart load of small building wood, 4 annas per cart load of fuel, and 2 annas per cart load of grass; and at that time the rise in the value of farm produce was only commencing. But merely considering the supply with reference to the rate payed, I believe the cultivator of the Narbada valley in the Hoshangabad district to be vastly better off now than he was in former years.

9. Statement B. showing produce removed by purchasers from the Reserved forests, exhibits at the same time the extent to which these forests have contributed in supplying the ordinary requirements of the people.

Section III.

Protection.

10. The protective arrangements have remained the same as in the previous year. With the view of removing a doubt that existed among Judicial Officers as to whether certain offences were punishable under the Forest rules, a new rule was prescribed and substituted for Rule XXII. formerly in force. The Forest rules are still, however, very defective, and it is feared that, under the Forest Act at present in force, it would not be possible to amend them in such a manner as to secure efficient protection to the Government forests.

11. It will be observed on reference to Statement No. 5 that the number of prosecutions for breach of the Forest rules was higher by 97 than in the previous year. The number of persons charged is, however, less by 44, and the number convicted, by 36. As compared with the figures for 1872-73 the number of prosecutions and convictions in the Upper Godavari and Bilaspur districts is comparatively small, and this tends to convince me of the correctness of the impression that the large number of prosecutions in these districts in 1872-73 was attributable to excessive leniency in previous years. The same cause seems to have acted in the year under report, for if we look to the districts of Balaghat, Chanda, Jabalpur, Betul and Hoshangabad, in which the number of prosecutions in 1872-73 was small compared with the area and distribution of the forests, it will be observed that the number of prosecutions has increased considerably.

12. With reference to the occurrence of fire and the difficulty of detecting and bringing to justice the parties through whom they originate as referred to in para. 11 of my report for 1872-73, I regret having to record that the same difficulties still present themselves. Every endeavour has been made to enlist the good-will of the Gaolies, and to secure their assistance in the suppression of jungle fires as suggested in para. 5 of the Chief Commissioner's Review of the Report for 1872-73, but without any good result.

In the Satpura Reserve nearly the entire area, for the protection of which a special establishment was not retained, has been burnt; and even in the specially protected block two fires occurred, (undoubtedly the work of an incendiary) but which it has been impossible to bring home to the offenders. My own impression is that the Gaolies are as a rule too well off to appreciate the remission of the full amount of the dues paid by them.

13. The general protection of the Government forests from fire is further rendered impracticable by the practice of private landholders of burning their own forests. It is quite certain that, while a general conflagration of private forests is going on, it would be impossible with the limited establishment available to prevent fire spreading into the Government forests. It does not, however, seem un-

reasonable to expect that people committing acts endangering the safety of the State property should be held responsible for such acts, and the consequences that may result therefrom. But such acts, not being committed within the limits of Government forests, are not punishable under the Forest rules. It would be an easy matter for individuals knowing when and where fires are to be lighted to guard against their spread into Government forests or even beyond the limits of their own estates; whereas it would be impossible for the Government officials in ignorance of the time and place at which fires are to occur, to guard against their spread.

14. The following is an instance illustrating the operation of the existing Act and Rules.

Several individuals were charged with having cut and attempted to remove a quantity of produce from the Satpura Reserve. Application was not made for the confiscation of the bullocks and carts employed in removing the produce (and which in this exceptional case could have been identified) as it was considered that such penalty would be excessive. The result of the case is that the Magistrate has demanded payment for the produce consumed, the confiscation of the balance has been ordered, and this Department has been directed to sell the same by auction and hand the proceeds into Court.

Thus the offenders escape punishment, and the proceeds from the produce of of Government forests goes to swell the revenue from Law and Justice, while the Forest Department bears the expense of the prosecutions.

15. If the interpretation of the Act and Rules in this case became generally known there would be wholesale cutting everywhere, and the proceeds from confiscated produce would not cover the cost of prosecution, for the quantity of produce that would be cut, would render it an easy matter for the people themselves to fix the rate that should be paid for it.

16. In like manner it would appear that in the case of a person who used a flint and steel or two pieces of bamboo in setting fire to a valuable forest, the flint and steel or the two pieces of bamboo would be liable to confiscation, but that no other punishment could be inflicted on the offender.

If Section 7 of Act VII. of 1865 is not so modified as to admit of some real punishment for acts committed in the Government forests without permission, it appears to me that forest conservation must sooner or later fall to the ground.

17. In Statement No 5 I have endeavoured to meet the wishes of the Government of India as expressed in para. 4 of letter No. 1414 of 11th December 1873, to the Chief Commissioner, Central Provinces, by classifying the offences against the Forest rules under five different heads. The absence of any figure against the Northern Division in the form, is due to the Divisional Officer having expressed his inability to furnish a correct statement. The circumstance has led to a form being prescribed by this office, in which all offences reported, the action taken on them, and the result of prosecutions, are to be duly recorded as they occur or the required information regarding cases taken into Court obtained.

Section IV.

Management and improvement.

18. Protection from fire being the only means by which the soil can be extensively prepared for the reception of seed and production of young forest growth, this operation is at present most important in these Provinces, where the forests are as a rule poorly stocked.

19. Statement No. 4 exhibits the area protected and the expenditure incurred thereon, while in the column of remarks is given the period during which each tract has been under special protection. A slight error which occurred in the Statement for 1872-73, regarding the area protected in the Satpura reserve, has been corrected in the present return.

Jagmandal, Chohariogogarh, Bijaragogarh, Barala, and Segrampur.

20. The five reserves mentioned first, in Statement No. 4 and the Hathibari Forest have been successfully protected from fire during the year under report, and the exclusion from them of cattle has been continued. The fire referred to in para. 7 of the Chief Commissioner's Review of the Forest Report for 1872-73, was not noticed in my report for that year, as it happened in 1873-74, and intimation of the occurrence did not reach this office till after my report had been closed. According to the reports received, this fire extended into block No. 6, the area of which is 2 square miles, and which is almost the poorest compartment of the forest. The various nalas, ravines and belts of bamboo jungle under which grass does not grow, which sub-divide this part of the forest, rendered the checking of the fire comparatively easy, and hence the success in preventing the fire extending beyond the block which it entered.

Satpura Reserve.

21. Two fires occurred in the protected portion of the Satpura Reserve, but were extinguished before they extended over more than 480 acres. The most satisfactory feature in the arrangements in this locality is the reduction in the cost of line clearing, which has come down to rupee 1 per mile. Endeavours are being made in this reserve to turn the services of the men employed as fireguards to some other account, and thus to reduce the cost of excluding fire.

Ahiri Forest.

22. In the block under special protection in the Ahiri forest fire thrice broke out, but was each time extinguished before much harm had been done. The total area burnt is estimated at 150 acres.

Block No. I, Punassa Reserve.

23. The block in Punassa the protection of which was attempted in 1872-73 was unfortunately burnt over at the end of last hot season. After last rains there was no officer available to make timely and efficient arrangements to guard against the occurrence of fire this season. It is hoped that the protection of 4 blocks from the close of this hot season will be effected, and that the area protected be increased annually by one block of about 7,000 acres till the whole forest is brought under strict protection.

Moharli Reserve.

24. The attempt made this season to protect one quarter of the Moharli Reserve from fire failed entirely. The first fire occurred early in the season, and it is believed originated with the camp followers of the District Superintendent of Police, who was marching through at the time. It is no easy matter to control the actions of camp followers, and hence when camps are passing through a forest there is constant danger of fire occurring. The fire that occurred later in the season swept over the whole area. This could scarcely have been accomplished in less than 48 hours, and the establishment must therefore have had ample time to check and extinguish the fire before at least half the area was burnt. No satisfactory explanation has yet been received as to why the fire was not arrested. The matter is at present under reference.

25. It will be observed that notwithstanding the two complete failures in Moharli and Punassa, and the occurrence of fire in one or two of the other tracts under protection, 133,490 acres have been successfully guarded at a cost of Rs. 3,926-1-5 or about 5·64 pie per acre—a result which may I think be considered satisfactory.

26. The objection to this kind of protection on account of its heavy cost has I think now disappeared, and though I look forward to some further though slight reduction in the costs, I can safely say that Government can well afford the amount spent in the past year for the end attained.

27. Regarding the result of this operation, its fertilizing effect on the soil is too well known to call for comment here, but a few remarks regarding its effect, as regards reproduction, may appropriately be given.

Mr. Thompson, Deputy Conservator in the Southern Division writes, regarding the Ahiri forest as follows :—

> "A very marked improvement is manifest in Divisions III. and IV. of this Reserve since the exclusion of fires. Large numbers of young teak, saj, beeja and sheshum with other species are now well above the grass and show healthy signs of growth. In fact a large proportion of the young growth is teak, both as seedlings and as shoots from roots hitherto kept down by the annual fires. So very marked is this improvement that it leaves no doubt as to the absolute necessity of protection being purchased even at any price. The block preserved from fire was refoliaged a month in advance of the one adjoining, while the latter did not assume the fresh livery till heavy monsoon rains had set in."

It may seem strange that so marked a difference should be observed in so short a time; but Ahiri is the richest forest the department has to deal with, both as regards soil and the growth on it; and as remarked by me in a former report, the benefit derived from excluding fire is as a rule greater in proportion as the soil is richer, and the forest growth more dense and luxuriant.

I presume that in the latter part of these remarks Mr. Thompson refers to the forest coming into full leaf, which would naturally be influenced by the humidity or otherwise of the soil and atmosphere; but my impression is that jungle fires tend to excite the vital action of all trees large enough to withstand their influence, and to accelerate the development of buds, and thus the untimely production of a large amount of leaf which never fully developes itself is brought about.

28. Since the submission of my report No. 794 of 9th August 1873, regarding the reproduction of teak in areas protected from fire, I have had an opportunity of visiting the Putpura block of the Satpura Reserve which has been under protection since June 1869. There appears to have been no special reason for selecting this block to deal with in the first instance beyond its being easy of protection; the soil is generally poor and the better class of trees comparatively scarce. I observed here seedlings of from 3 to 4 years old—an age of which they are rarely found in other parts of the reserve. Teak was scarce owing to the want of seed bearing trees, but there were nevertheless some vigorous young seedlings of this species standing from 3 to 4 feet. I have not seen one to equal them in other parts of the reserve. It is believed that the general forest growth and especially of the bamboos (which as it grows rapidly gives the first reliable symptom of improvement in a forest) is more luxuriant since strict protection has been enforced, and certainly last year the bamboo clumps in this locality threw up a greater number of shoots than were to be observed in other parts of the forest.

29. In the report last quoted, I referred to the large number of seedlings that had sprung up in the Satpura Reserve during the rains, both in tracts pro-

tected from fire and cattle and those in which no such special precautions were taken, I then stated that the number of seedlings was greater in the unprotected than in the protected area.

At the time the report was written cattle had not grazed in the unprotected block for 4 months, but they were admitted about that time, three small plots on which there were an average number of seedlings having been previously enclosed to prevent cattle trespassing on them. Prior to the admission of cattle the ground was simply covered with seedlings of different kinds; but two months afterwards, except in the plots enclosed, they had been completely cleared off. The number of cattle admitted was in the proportion of 1 to every 15 acres. In the other block, however, from which both cattle and fire were regularly excluded the seedlings continued visible till they shed their leaves. What proportion of these have survived the hot weather, it will be impossible to say till the setting in of the rains produces new leaf on them. The foregoing remarks are sufficient to show what an absolute necessity is the periodical exclusion of cattle.

30. Regarding the larger number of seedlings in areas that had been burnt and grazed as compared with those protected, the same coincidence was noticed at Ahiri last rains, and is I believe to be attributed to the seed being trodden into the soil by cattle and its vitality being thus preserved as will be explained further on in the remarks on re-stocking by artificial sowing in Jagmandal.

31. Regarding the results in other tracts protected from fire there is not much to add to the information already given. In Bori reproduction continues to progress slowly but surely, and the improved fertility of the soil is marked by the increased size of the bamboos produced.

32. The experiment of clearing about young seedlings of the better kinds was tried last season in the Korai block of the Satpura reserve. It was rather late in the season when it was commenced, but the result was decidedly beneficial, as the young trees became much stronger than those left to nature. In some instances, however, where the clearings was a little overdone, the seedlings suffered after the cessation of the rains. It is an operation that must be performed with care at the commencement of the monsoon, and after the middle of August a light growth of grass or other vegetation about the seedlings should rather be encouraged.

33. I would here note the result of an experiment tried in Jagmandal, with the view of stocking blanks by artificial sowing. Three acres on which no naturally shed seed could fall, were sown with seed in the proportion of one maund to the acre in June 1872, but no seedlings appeared during the year. In 1873-74 the following results were obtained :—

Seedlings counted on	20*th August* 1873.	4*th April* 1874.
No. 1 acre grass burnt and land ploughed ...	1,638	310
No. 2 acre land ploughed without burning ...	2,016	360
No. 3 acre seed sown broadcast without any preparation of the land ...	468	200

The varied results may probably be accounted for by the fact that in the first plot the land waswell harrowed after sowing, and thus a portion of the seed must have been too deeply buried ; while in plot No. 3 the seed being sown on the compact surface soil could have obtained no covering, and hence, when after

saturation in the rains a large proportion of it must have been left unprotected from the heat of the sun and atmosphere. a number of seeds must have split open leaving the germ to become parched and lose its vitality. This result of exposure of teak seed after saturation, I have frequently noticed both in the natural forest and in artificial planting.

The importance of noting this circumstance depends on whether the supposition is correct that in these Provinces teak seed does not under ordinary circumstances germinate in the first year, for under no other circumstances could the seed become exposed after saturation. That the supposition above referred to is correct, the result of the experiment last referred to goes a long way to prove ; it is also supported by observations given in my No. 794 of 9th August 1873, to which I may add that of a large quantity of seed sown by Mr. Leeds at Harda at the commencement of last rains not one germinated during that year.

Improvement by coppicing badly grown teak.

34. In the Western Division a commencement has been made in Raja-Borari in coppicing the irregular and badly grown teak, for which there now appears to be a ready market. This will result in the production of more valuable produce for which I anticipate a steadily increasing demand. Each year a block will be taken up and thus treated, till the whole forest has been worked over, and until then the cutting of shoots rising direct from the ground will be deferred.

In Punassa one block has been treated in the same manner. Unless some plan can be hit upon for re-stocking this reserve more rapidly than at present seems possible, the work here will be spun out over ten years, by which time the existing shoots that have risen from the roots should have nearly doubled their present value. Similar operations will be set on foot next year in Sowligarh.

35. While this work is progressing, the areas in Sowligarh, Raja-Borari, Kalibhit and Punassa that should be preserved as high timber forest will be selected and defined. An officer is now engaged in collecting the necessary details for the preparation of a working scheme for Punassa, but as this is a most important reserve it merits all the skill that can be devoted to it, and I cannot hope that the work will be completed under another year.

36. As regards the Ahiri Forest, it has been found that the sub-division of the forest for enumeration of standing timber is not adapted to working purposes, and a fresh sub-division has now to be carried out in order to secure some uniformity of growth in each compartment. Moreover the best means of securing the reproduction of teak is by no means finally settled, while on the possibility of utilizing the inferior woods must depend the species that are to be grown with the teak A final scheme for the management of this forest must therefore be deferred for the present.

37. In the Northern Division an officer has been deputed to prepare a plan for the management of the Bijragogarh Forests, which if not yet capable of doing so should shortly be able to yield some small wood that it would pay to put in the Allahabad market.

38. In the Sagar Division the Huthkoo Reserve has been divided into compartments for protection and working purposes.

J. T.—25—257—550

The existing crop is almost entirely coppice wood, but it is well stocked with the better species. Valuation surveys were carried out in each compartment giving the following result for the whole forest :—

Average number of trees per acre of—

Teak	...	59·6
Saj	...	11·54
Bijasal	...	0·08
Tendu	...	23·87
All species	...	232·87

There is some inaccuracy in the figures given by the Assistant Conservator relative to the rate of growth. As soon as these figures have been corrected the rotation will be fixed. I anticipate that this reserve will after the first rotation yield annually of teak alone 55,000 poles 6 inches in diameter, and the productiveness of the forest may reasonably be expected to increase. Seeing that nearly the whole of the area of this reserve is utterly unfit for cultivation all doubt as to the expediency of maintaining this tract as forest should now cease to exist,

Creation of artificial forests.

39. No attempt at the creation of artificial forests has been made during the current year, nor is it expected that the Department in these Provinces will have much work of this kind to perform, the principal operations necessary being the filling up of blanks, the establishment of better species, and the eradication of inferior and worthless kinds as the better species come on.

Experimental planting operations.

40. The small plantation at Telinkeri referred to in last year's report is purely experimental, and as such will prove most useful and instructive; while situated as it is, it must eventually give a clear profit of Rs. 4 per acre, even if nothing but fuel were produced. In the poorer portion of the plot of 27 acres sown the rains before last the young trees, owing to the want of timely rain, have made little progress; but in other parts they have done well, varying in height according to soil. A small sum was spent in weeding and re-sowing in blanks on some of the poorer parts, but owing to the deficient rain-fall no good result was obtained.

41. A small plot of 13 acres was stocked by sowing at intervals of 4 feet in rows 6 feet apart, and putting in a few transplants. The cost including weeding, came to Rs. 6-6-0 per acre, and now there are alive and doing well 490 trees to the acre, excluding those, of course, that are out of place and will have to be removed as soon as the rains set in. Part of the land had been previously under the plough which facilitated its preparation, but on the other hand it was excessively foul, as regards weeds and rank vegetation. The very irregular growth and almost total absence of seedlings of Seevun (a most-useful tree the wood of which is light and excessively strong) in the natural forests induced me to sow a good proportion of this seed in the plot last referred to. The seed was severely attacked by all kinds of vermin, rats, squirrels and land crabs; all took their share in extracting and cracking the seed and eating the kernel it contains. The seed was, however, found to germinate freely, the young trees to grow rapidly and to preserve as perfect a form as could be wished for. One tree of

J M Z 26–265—660

this species raised from seed in the rains of 1872 now stands 10 feet, though it has received no special attention.

42. The small proportion of Dowra seedlings as compared with the seed shed observed in the natural forests, also attracted attention and a large quantity of seed was sown experimentally But it was found that under the most favourable circumstances out of a quart of seed not more than 24 germinated. On examining the seeds it was found that a large proportion were not fertile, some of the finest and best looking seeds being mere shells without any germ. Again during the first year of its growth though in good soil they will continue in leaf throughout the hot season without water, the seedlings are so small and develope so little wood that it would be utterly impossible for them to live through a jungle fire of the mildest description.

43. An experiment was also tried to ascertain the means by which denuded nodular trap hills could be re-stocked at a minimum cost. This experiment made on 4 acres of land at first gave promise of good results, but the failure of the rain-fall at the time when it should have been regular and the young seedlings have made best progress, rendered it a failure, though a few young trees continued alive almost to the end of the hot season.

Adansonia Digitata.

44. As directed in your No. 1424-70 of 30th April 1873, an experiment was tried in raising the "Adansonia Digitata." I have 12 trees raised from seed last rains, and judging from their appearance, I may say that in these Provinces the tree will grow and thrive in good soil without water, and that on a poor soil it will grow and thrive if watered while young. But from the papers that have been sent to me, I am unable to extract any information as to the yield of the tree for paper manufacturing nor regarding the value of such produce. Without such information combined with a knowledge of the conditions under which the data is obtained, the probable financial results of cultivating this tree cannot be estimated, and I therefore think that until such information is obtained it would be inexpedient to do more than watch the progress of the few trees now established.

Mahagony and Ficus elastica.

45. A few trees of the West India Mahagony obtained from Calcutta, some of which have been put out in the Moharli forest, are thriving and promise to do well. A few of the "Ficus elastica" were also put out in the Moharli reserve ; they continue to thrive and at some future period should afford evidence as to whether in the dry climate of the Central Provinces the tree will yield sufficient juice to reader its cultivation remunerative.

Rattan cane.

46. An attempt has also been made to introduce into these Provinces a good description of rattan cane. Young plants of the "Calamus montanus" obtained from Sikhim have been put out in apparently suitable localities. The season was, however, a bad one for the experiment, and though they continue to grow, I am at present unable to record the result of the experiment. Should it succeed it will prove a valuable addition to the forest products, furnishing ready-made lashing for timber operations, and at the same time be a marketable article.

Eucalyptus globulus.

47. Regarding the experiment in the cultivation of the "Eucalyptus globulus" which this department has been directed to carry out, it will suffice at present to say that seed has been sown and will continue to be sown at intervals of a month throughout the

year, and that there are in Nagpur a few seedlings from the first sowing that have developed their third leaves and appear healthy and strong, but I nevertheless fear that the tree will not grow in these Provinces except at high elevations.

Cutting tap-roots of teak.

48. I may here advert to the cutting back of the tap-roots of teak as a means of fitting the young trees for transplanting when they have attained a large size. In compliance with the orders of the Government of India, some experiments have been tried but with little promise of good results. I am not yet prepared to give a final opinion on the subject, but I would here record what appears to me to be a good reason for thinking that this method of treatment is not adapted to teak. The suggestion originated from the old and well known practice of treating oak in cold climates. Now even in a warm climate a young oak has very little pith, and I believe that in a cold climate it would scarcely be visible without the aid of a magnifying glass, but the artificially raised teak seedling is nearly half pith. The cutting of the tree while in this condition must I believe be injurious, for if it does not actually admit of noxious substances passing into the system of the plant, it must in the case of teak, which depends almost entirely on its strong tap-root, deprive it almost entirely of the food it requires from the soil, while the supply of moisture being almost entirely cut off, the part of the tap-root left would probably shrivel up and die before it had time to develope lateral roots. Moreover I believe that the cutting back of the tap-root tends to produce lateral branches,—a condition which is not natural to healthy young teak, and it is certainly not required till the tree attains a height of 3 to 4 feet as its large leaves afford a sufficient supply of food to support and thicken the stem.

Works for opening up the forests.

49. Except in the Southern Division very little has been done under this head during the past year. In the Southern Division, notwithstanding the difficulties resulting from the want of a steady flow of water, 1,016 logs containing nearly 780 tons of timber and 12,526 sleepers and scantlings containing over 606 tons were conveyed from Alapilli by the nala of that name to Chichgundi, a distance of 8 miles for Rs. 2,439. It is believed that in an ordinary season three or four times the amount of work could be accomplished in the same time and for about the same amount. From Chichgundi timber can be conveyed by water to within 4 miles of Warora, but that portion of the Pranhita and Wardha rivers between Chichgundi and Kirmiri is still found very difficult to transport on, while from Ballarpur to Tulanaghat on the Wardha the river falls so rapidly as to necessitate a clear passage being made. This was done by means of a large wooden plough drawn through the sand by an elephant. All this adds to the cost of transport, but as has been proved, it admits of timber being brought up that could not otherwise be transported without special means for conveying it, while on the whole the cost is less.

From Chichgundi there is a clear run to the sea, and it seems probable that owing to the facility for transport in that direction it will prove the most advantageous out-let. Moreover in that direction water carriage can be obtained to within 90 miles of Hyderabad, where the prevailing rates for timber are considerably higher that at Nagpur.

50. The experiments made last year in the Western Division with the view of testing the practicability of some of the rivers leading from the forests

for timber transport did not prove successful,—in one instance owing to the want of efficient supervision, in the others owing to the want of water to bring the wood out.

51. In the Northern Division a small sum was spent on making "kacha" roads to admit of timber lying in the Banjar Valley forests being collected.

Section V.

Yield and working of the forests.

52. Reserves Nos. 1, 2, 3, 4, 5, 7, 15, 16, and 24 have remained closed during the past year, and from them no produce has been removed with the exception of a few Dowra logs from No. 7 (Bori.)

The total quantity of produce, exclusive of grass, gums &c. brought out from the different forests as estimated in tons, is given in column 13 of Statement A. The figures as might be expected are only approximately correct, the quantity having for some kinds of produce to be estimated on the average weight of loads. The produce taken from the Sal forests is dead timber that had been felled by the Bygahs for ral.

53. It will be observed that the whole area of Nos. 8, 9, 10, 11, and 12 has been open for felling. With the exception of bamboos, however, a very large portion of the produce removed has been dry wood. The quantity of green wood cut by purchasers has been very small, owing to the fact that such produce as is allowed to be cut by purchasers can at present be obtained on easier terms from Unreserved forests. There has therefore been no pressing necessity for restricting the felling of the inferior woods to small areas. A comparison of the figures given in Statement B. with those given in para. 6 of last year's Report shows that there has been a considerable increase in the demand, and it is expected that in the course of two or three years it will so far have increased as to render it advantageous *for the Department* to take all felling into its own hands. There is no other means by which the system of felling can be efficiently controlled.

54. In Punassa 3 blocks with an area of about 21,000 acres were closed against felling; from the remaining area the cutting and removal of inferior wood was permitted; cutting by purchasers is gradually being stopped. Improvement cuttings can then be made by Government agency.

55. In the Satpura Reserve 2 blocks were left open for the cutting of inferior woods by purchasers. The cutting of bamboos was permitted throughout the reserve except in the Korai block, and a few other parts west of the Northern road where close supervision over the cutting became necessary. Some small wood and a few logs of timber were taken by Government agency from different parts from which they could be removed without harm to the forest.

56. In Garhakota the removal of dead wood was allowed and a few thinnings were made. From Tigora the removal of dead wood and three mature trees was permitted. In Hathkoo and Ranjir two blocks were kept open and the people allowed to cut unreserved woods on payments. From the remaining portion of

these reserves dry wood only was permitted to be removed.

57. An examination of the Moharli Reserve, which was handed over to the direct management of the officers of this department in July last, showed that though a large part of the area had been quite worked out, the forest is still capable of supplying a considerable quantity of material, and further that the improvement of the forest will necessitate extensive cuttings. These cuttings must eventually be made by Government agency, but before attempting this, it was necessary to endeavour to obtain some knowledge of the demand and the description of produce that is in greatest request. One quarter of the area which was most in need of rest was closed against all felling. The removal of produce of the unreserved kinds from the remaining area was permitted on payment. The quantity of produce exhibited as removed is believed to be vastly below that taken out in the previous year, when the forest was leased to a contractor, and the figures do not therefore exhibit the demand that might be expected if the surrounding forests were held under direct management.

Timber operations.

58. The most important timber operations have been in the Southern Division. Statements 27 and 27A show in detail the amount of work done and the cost in this Division, but in the following Statement the expenditure under each head for each description of work is given :—

Description of work.	Quantity of timber.	Head AI.			Loss under Head AII., and percentage for deterioration of stock.			Head AIII.			Head BI, II, and III.			Total.		
	C.ft.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.
Felling, logging and bringing to depôt....	27,520	1,380	5	1	1,057	0	0	3,842	13	8	2,797	0	6	9,077	3	3
Conversion of rough timber into squared logs, scantlings and sleepers ...	47,535	7,789	2	8	1,273	0	0	...	...	...	2,543	14	7	11,606	1	3
Transport by land and water for 100 miles.	66,968	22,449	13	0	1,489	0	0	6,209	13	11	10,577	8	9	40,726	3	8

Under the head of logging and bringing to depôt the expenditure is high, which is attributable to loss of time in hunting over large areas for dead timber and windfalls, and to the difficulty in carrying on the work owing to the want of water for the draught cattle. With the view of giving a correct idea of the cost of transport by land and water, I have in each separate case taken the quantity of timber and distance it was transported, and having ascertained what would be the equivalent in quantity had the distance been 100 miles, have added the results

Z K 26 260 600

together, and obtained the figure 66,968, which is the equivalent in quantity transported 100 miles of the timber actually transported to various distances.

59. In the Northern Division an important experiment has been commenced the actual result of which cannot at present be given. The object of this experiment is to ascertain the minimum cost at which the timber of the Sal forests of Mandla and Balaghat can be landed at Jabalpur. In this part of the country there is no carriage whatever adapted for the work, and carriage could not be imported except at the most exorbitant rates. It was therefore determined to purchase Government buffaloes and to send up 25 pair of Light Field Battery wheels from the Southern Division. This was done, but there was some delay in procuring the required number of buffaloes for dragging, and work was not properly started till December. Up to the close of the year, 644 squared logs and scantlings containing 12,802 cubic feet had been cut and brought to depot, and of the above, 411 pieces containing 10,482 cubic feet had been brought to Telri and Mocha, points on the Banjar from which they can be floated. Mr. Jacob in his annual statement gave Rs. 8,259-15-8 as the cost of this work, but furnished no information as to how this figure was arrived at. On extracting the details from the accounts in this office, however, it was found that he had debited the work with the cost of all stock that had been engaged on it, and also with other items, the greater part if not the whole of which is debitable to work to be done and shown hereafter. The true cost of the work is as follows :—

	Rs.	A.	P.
Expenditure and deterioration of stock ..	297	14	0
Feed and keep of cattle	930	13	4
Half the total cost of road-making	212	6	1
Repairs to carts, logging, sawing and loading timber	1,896	1	10
Establishment	472	8	0
Total ..	3,809	11	3

From Mandla to Gowarighat the cost of transport will not exceed annas 2 per cubic foot, and it is hoped that a similar sum will cover all charges from the rafting depot to Mandla, but the latter point remains to be proved as the Banjar river has not yet been fairly tested. 5,671 sleepers were taken down from Mandla and Sakrighat to Gowarighat. The cost of transport from Sakri to Gowarighat, 55 miles, was about Rs. 3-8-0 per ton against Rs. 4-4-0 in the previous year, and from an examination of the items of charge, I am led to believe that there is still a field for reduction. For the 5 miles between Mandla and Sakri the transport rate stood at about Rs. 4-8-0 per ton, but it is hoped some arrangement may be found practicable to do away with the necessity of carting this distance.

60. In the Western Division the only timber operations have been the cutting of 4,456 sleepers and delivery of 3,077 at Khandwa and Mortakka for the Holkar "State" Railway and the coppicing of ill grown teak in Raja-Borari and Punassa already referred to.

61. In the Central Division a limited quantity of small wood and bamboos and a few good logs of Saj and Beeja were brought out by Government agency, as an experiment to ascertain the actual profits to be made thereon. Mr. McKee, the Assistant Conservator who held charge of the Division up to the close of the

year, has furnished the following details, which shows what very large profits must be made by all dealers who working on their own capital bring produce into Nagpur for sale :—

Description of produce and quantity for which rates are quoted.	Cost of felling, collecting and carting to Nagpur.			Average rate actually realized at Nagpur.			Profit.			Rate in the forest.			Difference or additional profit made by selling atd spot in Nagpur.		
	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.
Bamboos per 1,000 ...	24	13	7	58	14	9	34	1	2	7	8	0	26	9	2
Teak Khakers per 100 ...	28	1	8	61	8	0	33	6	4	10	0	0	23	6	4
Saj Khakers per 100 ...	18	11	0	70	13	4	52	2	4	6	0	0	46	2	4
Saj Golas per 100 ...	101	5	9	259	13	9	158	8	0	20	0	0	138	8	0
Dhowras per 100 ...	18	12	2	50	9	7	31	13	5	8	0	0	23	13	5
Ascoots per 100 ...	12	8	0	25	1	10	12	9	10	4	0	0	8	9	10
Bijasal logs each ...	7	12	6	19	9	8	11	13	2	6	0	0	5	13	2
Saj logs each ...	7	4	0	16	0	6	8	12	6	5	0	0	3	12	6

But the profits actually made must be considerably greater, as the supply is generally drawn from unreserved forests, which are much more accessible and from which produce is obtained at vastly lower rates

In the Nagpur Unreserved forests for instance, bamboos are sold at annas 12 per cart load. The rate being on the cart, the bamboos are cut to a length which admits of the greatest quantity being taken out, and the average load has been ascertained to be about 400. These bamboos can be brought to Nagpur for very little over half the amount per cart load that it costs to bring the larger produce from the Satpura Reserve, while the produce commands a price per 100 at least equal to half that of the larger. The dealer's profits in this case must be nearly four times what they would be if he took produce from the reserve, and I believe that it is much the same with every other kind of produce.

62. The Saw machinery at Allapilli continues to work well. The vertical frame with three saws turning out 5 inch slabs for sleepers' cuts over 2,000 running feet per diem, and could turn out 250 sleeper lengths per diem, but this outturn could only be obtained from sound wood.

Head II.—Unreserved or District Forests.

Nagpur.

63. Some endeavours were made to keep out fires from the Bheogarh and Dongartal forests, and the Deputy Commissioner reports them as having been attended with some success. In letter No. 4400 of 28th October 1873, the Commissioner enquired whether any saving on account of establishment could be effected by the transfer to

direct departmental management of the forests last referred to, but at the same time remarked that he would not propose any further restrictions regarding the access of the public to these tracts. I was unwilling to give a definite reply to this communication before obtaining more detailed information than was then available regarding the present condition of the forests, and accordingly deputed Mr. McKee to examine them and report on their condition and the arrangements that might be possible for their management. Unfortunately this officer was transferred before he completed his inspection, but prior to leaving he informed me that in those parts which he had visited, the forests have been worked out. All the good teak poles—which in spite of the low rates at which they have been sold, have hitherto formed one of the mainstays of the revenue—having been cleared out ; the bamboo too is deteriorating than which there is no surer sign of the degeneration of a forest.

Under such circumstances I could not volunteer to accept the direct management of these forests on the condition that the public were to be allowed access to them as heretofore. The better management of these tracts is, however, in my opinion a matter of very great importance. For the large Station of Kamthi, they with the less productive tracts of round teak are the most accessible forests the State possesses, and as a source for the supply of fuel alone are excessively valuable. With the exception of small areas the lands are quite unfit for cultivation, which makes their preservation as forests the more desirable. As hitherto managed their gradual extirpation becomes a matter of certainty. The District Officer appears to be aware of this fact, and it is to be hoped that some change for the better will shortly be made.

Bhandara.

64. From the District report it would appear that some special attention had been paid to the protection of two strips of teak-bearing land containing 2,381 acres.

The condition of the forests of this district was discussed in a report sent to the Commissioner in September 1872 with certain proposals for improved system of management, but I am not as yet informed whether it has been considered practicable to give effect to those proposals. From the District report for the past year, it appears that 68,787 houses commuted for the supply of their requirements from the Government forests. Data as to the quantity of produce removed is not available, but taking fuel alone and allowing two seers per house per diem (which will I think be found a moderate average of consumption for the Bhandara District), the consumption for the year must have amounted to about 44,400 tons, Allowing that the forests in their present condition are capable of yielding five maunds per acre, the annual possible yield would be 62,740 *tons*, which, considering that the forests are also drawn upon by parts of the Nagpur District, leaves but a small margin for the supply of wood for building and agricultural purposes. But I doubt very much whether in their present condition the possible yield amounts to five maunds per acre, and at any rate this degree of productiveness cannot be expected to continue as long as those who draw on the forests help themselves, when, where, and how they like. As a matter of necessity under the present system, the heaviest demands fall on those parts the least *able* to bear them.

Chanda.

65. The system in this district is simply the reservation of certain of the better kinds of woods, and leaving the whole forest open for all the other species. One large tract, however, lying to the east of Moharli, and the inclusion of which in the State forest is proposed, has been closed entirely. The revenue is collected in those villages which wish to commute through the agency of the Malguzars who pay two annas to Government per house. While the right to receive payment from other

parties is leased out. With reference to the commutation the District Officer has satisfied himself that the right thus conferred on the headmen of villages is not abused. That Officer, however, remarks that it is a question whether the rate might not be raised without unduly pressing on the people, but that he would be sorry to see any such step taken. Major Glasfurd observes that "the people would look upon it as a new tax, which in effect it would be."

66. I believe that but a short time since the absolute proprietorship in any portion of these unreserved forests might have been obtained by any one for a sum equal to or exceeding the upset price put upon them. It is therefore difficult to understand how payment for the produce of such lands can be looked upon in the light of a tax, but it is nevertheless possible that such an impression might arise in the minds of natives from the present system of fixing a rate on each house. I draw special attention to this point, as viewing such payments as a tax implies the existence of a right to remove produce from the Government forests, which to the best of my knowledge and belief does not exist.

67. No data as to the quantity of produce removed from the forests of this district is available. Calculating the number of houses supplied, however, by the amount realized, it is estimated that not less than 55,000 tons of fuel alone could have been consumed by those who commuted for the *supply of their* wants.

Balaghat.

68. In the Balaghat District five tracts have been closed, and the removal of nothing but dry wood from them has been permitted. Of these, two are in the Katanghi Tahsil, two in Lanji, the fifth and largest lies along the crest of the ghats above Burha.

The Pandratola Reserve, which remains under the control and management of the District Officer, has also been strictly protected, and from it nothing but grass has been allowed to be removed.

Wardha.

69. The special report forwarded with this Office No. 529 of 3rd June 1874 gives a full description of the system of forest management that has prevailed in the Wardha District, and the advantages and disadvantages resulting therefrom.

Sagar.

70. From the District report it appears that 18 tracts aggregating 38,435 acres, in different parts of the district, have been closed against felling, and placed under protection from cattle and fire. I am unable to state how far the latter arrangement has proved successful, but the periodical closing of blocks of forest must favour the growth of the existing crop. It is reported that the demarcation of the forests has been satisfactorily completed.

71. On the system of collecting the revenue, the Deputy Commissioner has furnished a very interesting report, which has been sent on to the Commissioner, by whom this subject will doubtless be separately reviewed. The produce has mostly been removed on commutation licenses granted to each house. In tracts other than those referred to as having been closed the removal of produce other than the reserved woods has been allowed on payment without restriction.

Damoh.

72. In the Damoh District attention has chiefly been paid to the development of a new system of commutation by the people for the supply of their wants from the Government forests. The District Officer has under consideration the necessity of closing certain areas against indiscriminate felling, but as yet it appears that nothing has actually been done in the matter.

73. I gather from the District report that the Ambagarh block, containing a large number of teak poles, has continued to be carefully protected. The six blocks in the south of the district, with an area of 54,517 acres in the vicinity of the Northern road, also remained closed with the exception of a small area from which the people were allowed to obtain produce. The Uluthiri forest with an area of 6,450 acres was entirely closed during the year, and the four blocks, viz., Sidhkoa, Paili, Lamajoti, and Ghanamoh, with an area of 9,023 acres, have been kept under a system of rotation.

Seoni.

74. Adverting to certain tracts in the Seoni Tahsil brought under direct management in consequence of the complaints against the application of the Commutation system, the District Officer remarks that the people now urge for a reversion to this system. This, however, he does not at present consider expedient, as many of the people taking advantage of the commutation in the previous year laid in sufficient to supply their wants for a couple of years.

75. Some portion of the forests bordering on the Jabalpur District, and which at the close of last year were found to have been over-worked have been closed against felling.

Mandla.

76. Woods of the reserved kinds continue to be protected, but as yet no other measures for the conservation of the forests have been brought into force. No action appears to have been taken on the subject referred to in para. 15 of the Chief Commissioner's review of the report for the previous year.

Jabalpur.

77. Of the total revenue of this district nearly 33,000 rupees or 67 per cent was realized at nakas on the borders of Berar. To prevent the extraction of produce without payment, 70 or 80 miles of boundary have to be guarded, and for this duty there has been an establishment of 7 Daffadars and 12 Chaprasies, and it is therfore only reasonable to suppose that a large amount of the produce escapes payment altogether, and information received from Berar tends to convince me that this is really the case. The heavy demand in this direction points to the necessity of some stringent measures being adopted before it is too late for the preservation of the forest in the south and south-west of this district, and I hope that during the coming open season it may be possible to depute a competent Forest officer to examine into their condition and draw up some definite proposals for their management.

Betul.

78. The right to levy dues on all produce other than reserved woods in the entire forest area was leased out to a contractor. Vast quantities of produce were extracted from the forests along the ghats. The Kanhan river offers facility for transport which makes these forests very attractive to dealers, and this fact combined with low rates will lead to the area belonging to the State being cleared of all but the few reserved kinds of wood if the system of leasing is continued. The condition of some of the private forests here is better than that of the equally accessible Government forests, and I think this may be attributed to private parties waiting till produce commands a better price. In Deogarh, however, there is distributed in patches a considerable quantity of young teak, which is doing well and will some day if judiciously worked bring in a considerable annual return to the State, and there is still a fair quantity of good material in between the hills.

Chhindwara.

79. The forests of this district are most admirably situated for the supply of the wants of the people in the rich and populous valley of the Narbada. During the year the area has been increased by the transfer from Betul of the forests in the Borda Taluk and

Hoshangabad.

by the reversion to Government of a tract known as the "Malin Ilaka" which was held under Summary Settlement. At some time, probably not 100 years ago, this latter tract must have been one fine forest.

Even within the last 13 year, during which time the tract has been familiar to me, vast quantities of good timber of fine dimensions have been taken out; and between 25 and 30 years ago, many portions of the forest, especially about Kankri, Chickli and Chunagarh, teak of superior quality and large size was produced. With the exception of a few trees scattered along the foot of the Pachmarhi range and in the extreme east, all the large good timber has been cut out. Still there is a considerable quantity of good young wood, which in parts is chiefly coppiced teak. On visiting this tract I found that "dhya" cultivation had again broken out in the heart of the teak-bearing portion. It is true that the teak had been left standing, but probably many of the young trees will die from sudden exposure, while the remainder will take years to recover its effects. The matter is the more to be regretted as most of the people engaged in the dhya cultivation had under the direction of this Department practised a more civilized system in open flats in the Bori forest, where they were located by me to secure men for forest work and protective purposes, but from which they were subsequently expelled in 1870-71, for some reason unknown to myself. The remaining portion of the unreserved forests have a two-fold value attaching to them, for with the exception of a small area in the North-west corner of the district, they cover the range of hills which bound the Narbada valley on the south and must catch a large portion of the rain-fall. The average distance of these hills from the centre of the cultivated valley is from 6 to 8 miles, and this fact renders them excessively valuable as a source for supply of the wants of the agricultural classes. The losses sustained by heavy floods on the guaranteed railway which runs within a few miles of these hills, while the line was under construction is sufficient to exemplify the importance of these forests as an agency for the prevention of heavy floods. In their present condition, however, they can have no influence of this kind, there being no porous soil to absorb the moisture as it falls.

80. The introduction of the Nimar system has been attended by a very material increase in the revenue, that for the year under report being Rs. 38,858, against Rs. 15,204 in 1871-72, but though preferable to the old system of farming is not in my opinion the best that could be introduced.

Major Lugard, Deputy Commissioner, after referring to the want of efficient supervision and the difficulty of obtaining respectable men to check the produce removed, writes as follows;—

"Then again frauds on the revenue from without, such as—

1st.—One man getting a license and passing it on to his neighbour and so on till several have used the same license.

2nd.—The connivance in such practices of the Malguzars or Patwaris deputed to issue license.

3rd.—The using of a Malguzari license for procuring timber, &c., for sale.

4th.—The difficulty of finding a sufficient number of license distributors.

5th.—The inefficiency of the check on them, owing to the small supervising establishment.

6*th*.—The paucity of men to allow of breaches being prosecuted without weakening the cordon, and so on.

Various efforts have been made to remedy these difficulties, which are partly owing to defects in the system and partly to inefficiency of establishment, and the breaches and evasions of forest rules are not so numerous as in the early part of the year."

From the foregoing remarks it will be observed that as an agency for the issue of licenses and collection of the revenue, the Malguzars and Patwaris have not proved immaculate. The present system, on the introduction of which much pains has been bestowed by the District authorities, is however a decided improvement on that of leasing out the forests, and it has resulted in bringing a much larger revenue to the State.

81. I believe that if Government would sanction another Assistant Conservator it would prove most advantageous in this district to divide the real forest work and that of collecting the revenue between the Forest and District authorities. A general system could then be introduced and could from time to time be improved till the arrangements are sufficient to meet all future requirements.

Narsinghpur.

82. The District Officer intimates that the felling of wood of the reserved kinds has been confined to certain areas where thinning was required, and that the felling was done by the Government agency. The forests of Narsinghpur have long been in an exhausted condition, and compared with most other districts the supply of wood of the better kinds is small. The thorough restoration of the forests would I fear be too costly a work to be undertaken, but I think it will ere long be found expedient to endeavour to restock some limited areas from which the produce can be easily extracted.

Nimar.

83. It was found that the Spinning Companies in Berar were fast denuding the forest lands along the Railway by the cutting and extraction of fuel, and all cutting within 10 miles to the east of the line between Mandwa and Chandni has in consequence been stopped. No other arrangements for restricting the felling of wood other than of the reserved sorts to fixed localities have been in force. As the District Officer remarks, the matter is one of considerable importance, but which nevertheless requires careful consideration of the condition of the forests before any definite action can be taken.

84. Referring to the working of the present system in Nimar, the Deputy Commissioner writes as follows :—

4.—"It will be seen that there has been a total decrease of Rs. 1,762, which is due to a falling off in commutation and grazing licenses. The cause of this falling off is due mainly if not entirely to the reduction of our establishment, by which evasion of the forest dues has been rendered more easy.

5.—The fact is, that "unless the taking out of these licenses is carefully watched and evasions promptly punished, there will year by year be a decrease in the revenue from these licenses, and therefore in my opinion it was impolitic to have reduced the temporary establishment below the point it formerly stood at, as the saving effected in wages does not make up for the direct loss of revenue in addition to the increased facility for evasions which give a fatal blow to the prestige of the system.

6.—I mentioned in last year's report that these commutation licenses were much abused, and that loss to the revenue accrued from the dishonest use of one license by two or more families. A further experience of the district has confirmed me in this opinion, though I have only been able to detect a few cases."

85. As regards the prospects of private forests being preserved, the following remarks by Colonel Playfair may be read with interest :—

7. "A cause also which has slightly tended to reduce the number of commutation licenses, is that Malguzars are now making much more use of their forest land and are issuing licenses at reduced rates for the produce, thereby advantageously competing with Government. I have no means of ascertaining what the proportion of forest produce disposed of by proprietors is, either as compared to previous years or to the Government forest produce.

"But I hope to know at the close of the current year, as I have with the consent of the Malguzars themselves, introduced printed passes and registers which they have promised to keep up, so that in each case the exact number or quantities will be known.

8. "There is no doubt that the Malguzari jungles in a number of villages is very far in excess of the direct wants of the village community, and the Malguzars finding this overplus a considerable source of profit, are not slow to avail themselves of the opportunity. In many cases too I fear they are killing the goose not being content with the golden egg."

Seeing that 17,700 "butties" extracted by Government agency and sold only realized about Rs. 3,050 it would appear that a very small profit is sufficient to induce owners of private forests to sacrifice the prospects of future advantage from them, and then the conviction forces itself upon one, that sooner or later it will devolve on the State to meet, if not the whole, at any rate, by far the greater portion of the requirements of the people in the way of forest produce.

86. The collection of data regarding the actual consumption of produce which Colonel Playfair is endeavouring to obtain, will prove most useful.

87. A small tract in the Sanjari Pargana called Banjari, containing about 10,000 teak poles of good size, and which has been protected for several years, has been demarcated with masonry pillars. The commutation rate for agriculturists has this year been fixed at rupee 1 for each agriculturalist instead of at one anna per rupee of land revenue as in the previous year.

Raipur.

88. The new systems under which the removal of forest produce is permitted, has scarcely been long enough in force to admit of an opinion regarding its working being formed. The District report is forwarded in original for the Chief Commissioner's perusal.

Bilaspur.

89. Some good work was done here in extracting dead teak from the forests and disposing of the same by sale; about Rs. 16,000 were thus realized. It is hoped that during the coming season it may be possible to depute an officer to examine and report on the teak-bearing tracts on the Pranhita and Indrawati rivers, and in the meanwhile the District Officer is endeavouring through the agency of his Forest establishment to collect some information regarding the quantity of standing timber still left and the proportion of young growth.

Upper Godavari District.

S—30—299—600

90. The following is a comparative Statement of the revenue realized in different districts for the past two years :—

Districts.	1872-73.				1873-74.			
	Total revenue.			Revenue per acre.	Total revenue.			Revenue per acre.
	Rs.	A	P.		Rs.	A	P.	
Nagpur ..	19,878	2	1	16·28	21,353	2	6	16·42
Bhandara ..	29,766	3	8	16·26	31,461	1	11	17·19
Chanda ...	26,350	10	5	3·50	22,572	5	1	3·00
Wardha ...	7,166	8	8	32·18	9,107	11	6	13·65
Balaghat ..	21,723	6	8	6·30	21,293	8	1	5·93
Jabalpur ...	24,155	11	5	22·93	17,842	4	9	16·38
Sagar ...	23,364	4	8	9·61	26,778	14	4	11·02
Damoh ..	12,615	7	8	4·42	25,883	0	1	9·05
Seoni ..	44,209	4	2	18·34	35,569	11	11	15·71
Mandla ...	34,063	4	9	2·17	24,782	0	5	3·24
Betul ..	31,705	15	9	10·00	49,155	10	10	17·24
Chhindwara ...	15,218	8	4	6·80	16,369	1	4	7·31
Hoshangabad ...	22,532	4	10	7·46	38,858	3	6	9·53
Narsinghpur ...	8,149	7	9	12·34	9,460	1	5	14·81
Nimar ..	40,310	12	2	7·29	38,557	2	6	6·97
Raipur ...	28,629	2	8	6·23	25,264	5	3	5·50
Sambalpur ...	...	...	...	...	...	...	...	...
Bilaspur ..	5,486	6	10	2·53	11,510	2	3	5·32
Sironcha ..	12,642	10	9	2·33	38,521	2	0	7·11
Total ...	4,07,968	5	3	...	4,64,339	9	8	

SECOND PART—GENERAL.

Head I.—Financial Results.

91. As predicted in para. 88 of my Report for 1872-73, the operations of the current year have been attended by a marked improvement in financial results, the receipts standing at Rs. 5,68,367-0-8 and the expenditure at Rs. 2,83,557-8-8, thus leaving a surplus of Rs. 2,84,809-8-0 or Rs. 50,973-6-9 in excess of the surplus for the previous year which stood at Rs. 2,33,836-1-3. The details of the revenue and expenditure will be found in a Form No. 21.

92. I will now proceed to explain the differences under the various heads between the regular estimate and the actuals for 1873-74. As regards receipts the difference is pretty evenly distributed over the important heads ; it is to be attributed to a slight rise in the rates in some districts and to better arrangements for collection of the revenue by which the extraction of produce without payment has been more effectually prevented.

93. Under A. expenditure, the difference under Head I. is owing to the smaller expenditure on the Mandla timber works, owing to the delay in procuring stock to collect the timber; also to the failure of the water in rivers in the Southern Division, which rendered it impossible to accomplish the amount of work projected; a slight reduction in the amount of work done in the Western and Central Divisions and to some of the transport being accomplished at lower rates than was expected.

94. The amount in excess of the estimate under Head II. is on account of the transfer to this Department of an old Engine and Circular Saw bench sent up for the Ahiri sleeper work at the Public Works Department valuation of 4,000 rupees.

95. The smaller amount disbursed under Head IV. is owing to the part purchase money of the Ahiri forest not being paid, while the smaller disbursement under Head VII. results chiefly from a reduction in the cost of boundary clearing. Under the other heads the actuals vary little from the figures of the estimate.

96. The outstandings and liabilities on account of work are given in Form 23. Of the outstandings, Rs. 29,086-13-5 on account of the sleeper transactions of 1869-70 have been found irrecoverable, and the sanction of Government has been applied for to write off the amount. Form 23 A. shows the outstandings on account of sales, as will be seen from the footnote to this form. Rs. 1,817-11-9 have reference to former years; of this sum Rs. 1,211-12 0 is due by the Great Indian Peninsula Railway Company. The liability is admitted with the exception of Rs. 63, which is still under reference. The other item of Rs. 526-9-0, I will have to seek the Chief Commissioner's sanction to write off. It is partly a balance on account of timber supplied to the Local Funds Committee at Jabalpur, and there appears to have been some verbal promise for a reduction of the price. Under the head Outstandings on account of the year I have included Rs. 10,427-1-4 on account of 140 logs containing 5,213-6-6 cubic feet supplied to the Warora Colliery Division, notwithstanding that the Public Works Department authorities have as yet declined to sign the invoice on account of the rate charged; for I feel sure that the Chief Commissioner will not sanction the transfer of logs, containing nearly a ton of timber each, at a lower rate than Rs. 2 per cubic foot. The Public Works Department should have some idea of the cost of transporting such produce, and considering that the Chief Engineer when pressing for the speedy delivery of the timber, stated in a letter to myself that it was then more advantageous for his department to pay Rs. 5 per cubic foot at Warora than 2-8-0 at Kamthi, it is difficult to understand how Rs. 2 per cubic foot could be objected to, when the requirements of the Public Works Department had been met by supply of the material.

97. Form 24 gives the details of the produce brought on stock during the year. The sleepers, scantlings and planks, as well as 722 squared logs at the Alapilli depôt, are merely receipts by conversion of rough material previously on stock. In Form 25 are given the receipts and issues of timber stock, losses, and opening and closing balances with the value of the same. In these forms the sleepers &c. cut from timber on stock have been shown as receipts as in Form 24, and the rough material consumed in yielding them has been shown under the head of losses.

98. In Form 25 A, return of live and dead stock, a liberal allowance for deterioration has been made in column 5. One elephant died. The department lost also 59 head of cattle, of which nearly 50, however, had done work for six years, or one year longer than they were expected to last.

99. In Form No. 26 is given the quantity of produce sold from depot, the amounts realized thereon, and the average selling rates; while Form 27 shows the cost of timber brought on stock, and Form 27 A, the cost of timber transported from forest to station depôts for sale. In these two forms I have included under the head of timber expenses, the cost of feed and keep of stock employed on the work and the value of stock lost, together with the estimated reduction in the value of stock by deterioration.

100. In Form 28, the amounts exhibited under receipts as recovered on account of former years and as outstanding on account of the year, are fully explained by Form 23 and 23 A. In Form 28 for 1872-73 no amount is exhibited as due on account of the transactions of that year, while in the same statement for 1873-74 is exhibted as disbursed on account of previous years a sum of Rs. 7,226-2-8, of which Rs. 3,784 are debitable to 1872-73. This latter amount was disbursed on account of carriage of sleepers from the forests to Mandla, the work done for that amount having been exhibited in the returns for 1872-73.

The amount was omitted from Form 28, by an oversight in the Divisional office. The amount was disbursed directly completion of the work contracted for rendered it payable, and hence it has not appeared as a liability in Form 23. Of the balance, Rs. 3,000 were paid on account of dead wood taken out of the Ahiri forests in 1871-72 prior to the date from which the deed of sale is to have effect. The amount was paid as soon as an understanding was come to regarding its price, and hence it has not appeared in any of the accounts as a liability. The remaining sum of Rs. 442-2-8 was the amount of a decree given against Government in a Civil suit on account of a transaction of 1869-70. The supplementary Statement to Form 28 details the years and heads to which the items of receipts and expenditure on account of former years are creditable and debitable. The value of the year's transactions is shown to be Rs. 5,85,197-13-1 and the cost of the same Rs. 2,78,694-7.1; this gives a balance in favour of the year of Rs. 3,06,503-6-0, to which if the increase in the value of timber stock, Rs. 55,218-12-3, be added, and the decrease by loss and deterioration of other stock be deducted, the net result of the year's transactions, viz. Rs. 3,60,276-12-5, will be obtained. These figures when compared with the results of previous years must be considered satisfactory, but they give no idea of the actual advantages which the State has derived from its forests. This circumstance arises from the fact that nearly the whole of the produce consumed is supplied at nominal rates. If the actual quantity of produce taken out were known, it would be a tolerably easy matter to estimate its minimum value, but on this subject no data is available. In order, however, to show that the statement I have set forth is not without grounds, I would submit that the local consumption of wood and bamboos in British territory in the Central Provinces, is estimated at about 3,000,000 tons per annum, but cannot possibly be below 2,500,000 tons, and there is good reason to believe that more than half the demand is met from forests the property of the State; but presuming that the quantity taken from the Government forests does not exceed one half the demand, we have 1,250,000 tons supplied for about 3,50,000 rupees. The average selling rate for fuel at the head quarters of 16 districts of the Province is at the present time about Rs. 7 per ton. Considering therefore the manner in which the forests are distributed, the average value of the produce as fuel in the forests would certainly amount to Rs. 1 per ton, at which rate the value of the above produce would amount to 12½ lakhs of rupees, or more than double the total revenue exhibited by the accounts of the department.

101. I do not desire by the foregoing remarks to advocate a rise in the rates charged, though in some cases the rates might possibly be increased without pressing unduly on the people. And as regards produce taken for sale, higher rates should without doubt be charged in many of the more accessible tracts, but

merely to show that the financial statement does not exhibit the full value of the direct advantages derived by the State from its forests. I say direct advantage, for if no advantage resulted from it, the supply of produce at nominal rates would not be tolerated, and the actual yield of the forests cannot be looked upon in any other light than that of a direct advantage.

102. A judicious private speculator who had extensive steam machinery at work and also a forest that supplied it with fuel would in addition to debiting his forest with its expenditure, credit it with the market value of the produce supplied for his machinery, for he could not otherwise tell whether it was more remunerative to grow or to buy the produce required. In like manner it seems essentail to the true appreciation of the advantages the State derives from its forests that the difference between the market value of the produce supplied and the rates at which the people are allowed to take it should be taken into account. It is true that, apart from direct advantages, the State has other grounds for taking steps to secure the preservation of forests, but the value of the advantages resulting therefrom could not, at any rate in the present stage of the science of forestry, be reduced to figures, and hence they cannot be taken fairly into account in reviewing the results of forest operations.

103. It will be observed on reference to the accompanying letter No. B. 771 of 18th June 1874, from the Accountant General, Central Provinces, that there are some discrepancies between the Forest and Civil accounts. They arise from the following causes:—

1*st.*—By certain cheques issued by Officers at a distance from Head Quarters not having been cashed before the close of the year.

2*nd.*—To credit not being taken by some District Officers and the Deputy Conservator, Southern Division, for monies actually remitted to Treasuries before closing of the Treasury accounts.

3*rd.*—To the Forest accounts exhibiting all other remittances for which Treasury receipts were obtained before 1st April, whereas the accounts of Sub-Treasuries were closed on various dates prior to 1st April.

With the exception of an item of Rs. 9,587-5-0, under head of Remittance to Treasuries, omitted from the Forest accounts till it has been ascertained whether or not the Department is entitled to credit for the amount, and Rs. 67-8-7 under the same head, the whole of these discrepancies will have been adjusted by the close of this month. A difference of Rs. 4-9-6 under the head of Remittance from Treasuries also remains for adjustment, as will be seen on reference to Statement C. This discrepancy arose from two distinct transactions being mixed up, as will be seen from para. 6 of the Accountant General's letter, and the drawing Officer's failing to take credit for the remittance subsequently made by him.

104. With reference to para. 4 of the Accountant General's letter, I would note that at the close of 1872-73 an explanation of such discrepancies as were known to this Department to exist was furnished, whereby it was shown that the bulk of these discrepancies resulted from the Department being debited in the Civil accounts with larger sums than had been received, and the accounts for that year were duly verified by the Deputy Accountant General.

Head II.—General Remarks.

Defects of the system of granting annual licenses for the removal of forest produce.

105. At present the bulk of the produce taken out of the forests is passed on licenses granted for indefinite quantities and which are current for one year. It has been shown by District Officers in remarks given in this and previous reports that these licenses are abused.

1*st*.—By the license granted for the use of one individual or household, being used by several.

2*nd*.—By the holders laying in sufficient produce for more than one year on a license granted for one year's requirements only.

3*rd*.—By holders extracting produce for sale on licenses granted for the supply of their own requirements.

It is further reported that these abuses of privileges are in some cases connived at by Malguzars and Patwaris entrusted with the issue of licenses. It has also to be borne in mind that building wood is not required every year and it cannot reasonably be expected that commuters will fail to take advantage of this fact.

106. The difficulty arising from produce being taken for sale on licenses granted to supply home wants are most difficult to guard against. It may be checked by the establishment of Nakas at markets where produce is brought for sale, but cannot thus be wholely guarded against, for there are divers ways by which this system of check can be defeated, and it is tolerably will known that such devices are practised.

Professedly the system of issuing these annual licenses has for its object the accommodation of the people. It has to be considered whether this end is as fully met by the existing system as it might be, and whether some arrangement more advantageous and equally if not better calculated to meet the requirements of the people cannot be devised.

107. In order that one party should not be favoured more than another it is necessary that the amounts to be paid should be fixed according to the requirements of individuals, which can scarcely be the case under the existing system referred to. Among cultivators with equal stock at their disposal one may be well-to-do, and indulge in a large supply of forest produce, while another may be in debt and be obliged to let out his carts and bullocks, and consequently be content with a smaller supply of forest produce.

108. This objection would be removed if payment were made on the actual quantity of produce taken, which would also remove the objection referred to by Major Lugard, viz. payment in advance for the whole year ; for the produce required is not taken out all at once, but at two different periods, viz. between sowing and reaping and between the reaping season and the monsoon. Passes might be given for specific quantities as cart loads, bullock loads and head loads, the description of load being indicated by the size of the licenses and the description of produce by its colour. This could not be objected to on the ground that it would necessitate consumers applying constantly for licenses, for they could obtain as many as they like at any one time, while if more convenient they could take fewer, and thus their payments would be in instalments, while there would be equal and possibly greater facilities for obtaining them. I say " possibly greater facilities" for as will be seen hereafter there would be a more efficient check and consequently more people could be trusted with the issue of licenses. The issue of licenses for each load would also prevent the delay which people have to put up with in consequence of one of several carts belonging to one individual breaking down, an occurrence which is very common.

109. The advantage to the State would be (1st) that a more accurate knowledge of the requirements of the people would be obtained ; (2nd) that an efficient and perfect check over license issuers would be established.

The first end would be attained by the collection at existing posts for prevention of the unauthorized removal of produce, of the licenses for all produce taken out, a pass being given in lieu of each license. The men stationed at these chowkies would have to produce a number of licenses corresponding with the reduction in their stock of passes, and these licenses having on them the number of the office of issue, must be a perfect check over the receipts. The men stationed at the chowkies if they failed to produce licenses corresponding to the number of passes issued by them, would at once be detected of having issued passes without authority and become liable for the value of the same. It is true that this would not guard against produce being allowed to go out without a pass, but with the assistance of the senior Subordinates employed and the Police this should become so very difficult and the risk of detection so great that even if attempted, would I believe, be very soon given up. Of course there are districts where such a system could not be introduced, but there are others, such as Hoshangabad, and indeed any district where the Nimar system can really succeed, where I believe it would work thoroughly well.

110. Knowing the large demand there is in Berar for small forest produce it has been a matter of surprise that the exports from Nagpur are not much larger than they have been. At Wardha too there is a great want of large bamboos such as can only be obtained from Nagpur, and it was at first thought that the cost of carting in the produce so ran up the prices, as to render their export unremunerative; but it has been found that for distances up to 100 miles carriage by cart for such produce is not dearer than by rail, notwithstanding that the Railway Company carry bamboos at fuel rates, as is shown by the following figures obtained by experiment :—

Carriage by cart of 1,000 large bamboos from Korai, including all charges to Kamthi, 49 miles ... Rs. 15-0-0.

Carriage of 800 of the same by rail from Nagpur to Wardha, 49 miles, exclusive of the cost of unloading ... Rs. 16-6-0.

The Railway authorities alone can tell whether it would pay to transport at lower rates, but I believe it to be tolerably certain that any material reduction of rates would lead to a large increase in the export of produce of this kind, which can be obtained from certain localities in considerable quantities and at moderate rates.

111. The audit of the Forest accounts has continued with this office, owing to the want of an Assistant for the greater part of the year: the work has been hard, and has tied me down more than would otherwise be necessary. The arrangement will be the more necessary as more extensive works of improvement are taken in hand. As has been already shown, there were some discrepancies between the Civil and Forest accounts, but for this good reasons have been assigned. I am now in correspondence with the Accountant General regarding the means by which the possibility of differences may be reduced to a minimum. For the last two years a plus and minus account to exhibit the adjustment of discrepancies has been kept in this office, and if this course were adopted in the Accountant General's Office, an effectual check would be established over the Forest accounts without adopting the course suggested by the Accountant General of having the Forest accounts closed on different dates in different localities.

112. The appointment of Native apprentices gives fair promise of becoming an efficient means of obtaining an intelligent and useful class of men for employment in the Forest Department. Chunder Kumar Chatterji, who was appointed

Apprentice of the 1st grade in August. last, has worked hard to become master of the various subjects connected with his profession. He has been employed under Mr. Thompson on both forest and timber works. Part of his time has been given to learning surveying, both theoretically and practically, for which the employment of a professional, survey party at Ahiri has offered facilities. Another apprentice, highly recommended by his instructors, has recently been appointed, and promises to do well.

I would strongly recommend that two of these appointments be sanctioned annually for the Central Provinces for the next five years. I believe that this course would bring forward many more candidates and afford a greater field for selection.

113. Of the Gazetted Officers of the Department, the three Deputy Conservators have worked with zeal and energy. Mr. McKee, Assistant Conservator, has successfully conducted the work in the Central Division, of which he has held charge, and has displayed both zeal and ability in the discharge of his duties. Mr. Foster did good service under Mr. Thompson at Ahiri; and Mr. Thomas under Mr. Jacob took an active part in the demarcation of the Sal forests and the management of the Bijeragogarh forest. Mr. Richardson, Officiating Assistant Conservator, has held charge of the Sagar Division, and has done good work in collecting details necessary for the preparation of a working scheme for the forests in his charge. Messrs. Fernandez and Smythies, the two Assistant Conservators who joined in December last, have already begun to take an active part in the work of the Department and are both hardworking officers.

114. There has been some delay in the submission of this report, but I trust that the fact of my having at the close of the year to do without the aid of an Assistant at Head Quarters and to take myself a share of executive work, will be considered sufficient to account for the want of punctuality.

I have the honor to be,

Sir,

Your most obedient Servant,

J. C. DOVETON,

Conservator of Forests,

Central Provinces.

No. 1.

Area of Reserved Forests:

Reserved Forests.	Area in 1872-73.		Added during the year.		Excluded or transferred to other heads.		Total remaining in 1873-74.	
	S. miles.	Acres.	S. miles.	Acres	S. miles.	Acres	S. miles.	Acres.
Bijeragogarh ...	32	...	...	...	...	...	32	...
Barela ...	10	46	...	...	...	...	10	46
Singrampur ...	10	156	...	...	...	...	10	155
Jagmandal ...	55	...	...	...	...	...	55	...
Choharigogarh ...	5	...	...	...	...	...	5	...
Bori ...	37	...	...	...	...	...	37	...
Bowergarh ...	118	...	...	...	...	...	118	...
Kalibheet ...	260	...	...	...	...	...	260	...
Rajaborari ...	250	...	...	...	...	...	250	...
Kamapur ...	166	...	...	...	...	...	166	...
Sowligarh ...	100	...	...	...	...	...	100	...
Punassa ...	143	200	...	...	...	...	143	200
Satpura ...	456	91	...	...	...	...	456	91
Hathibari ...	3	203·75	...	...	...	...	3	203·75
Kantranala ...	5	348	...	...	...	...	5	348
Garhakotah ...	4	339	...	...	...	...	4	339
Tigora ...	...	459	...	...	...	...	...	459
Ranjeer ...	14	521	...	...	...	...	14	521
Ranipura ...	11	346	...	...	...	...	11	346
Hutkoo ...	28	638	...	...	...	...	28	638
Morlhai ...	150	...	...	...	...	...	150	...
Pandratola ...	7	480	...	...	...	...	7	480
Bimaram, Mirkulloo } Of Ahiri forests ...	...	...	32	396	...	...	32	396
Total	1,869	626·75	32	396	...	...	1,902	382·75

B. C. G.—26-266-600.

No. 2.

Area of Unreserved Forests.

Districts.	Area in 1872-73.		Added during the year.		Excluded or transferred to other heads.		Total remaining in 1873-74.	
	S. Miles.	Acres.	S. Miles.	Acres.	S. M.	Acres.	S. Miles.	Acres.
Nagpur ...	390	...	...	...	...	...	390	...
Bhandara ...	549	...	...	...	...	..	549	...
Chanda ..	2,254	...	...	..	...	...	2,254	...
Wardha ...	200	33·75	...	..	...	...	200	33·75
Balaghat ...	1,034	134	44	429	1	576	1,076	627
Jabalpur ...	326	424	...	...	...	..	326	424
Sagar ...	729	...	...	...	...	...	729	...
Damoh ...	856	...	2	...	...	...	858	...
Seoni ...	723	...	...	...	44	..	679	...
Mandla ...	2,293	...	..	...	..	...	2,293	...
Betul ...	951	472	...	...	96	422	855	50
Chhindwara ...	671	...	...	...	...	...	671	...
Hoshangabad ...	905	...	317	469	..	...	1,222	469
Narsinghpur ...	189	447	1	565	...	..	191	372
Nimar ...	1,658	...	...	...	...	..	1,658	...
Raipur ...	1,377	...	...	..	..	...	1,377	...
Sambalpur ...	...	...	..	...	...	...	...	...
Bilaspur ...	649	...	...	...	...	...	649	..
Sironcha ...	1,624	576	...	...	...	..	1,624	576
Total ...	17,381	166·75	366	183	142	358	17,604	631·75

No. 3.

Area of Plantations.

Plantations.	Area in 1873-74.			Total cost.			Added during the year.			Amount expended during 1873-74.			Total area up to 1873-74.			Total expenditure incurred up to 1873-74.		
	A.	R.	P.	Rs.	A.	P.	A.	R.	P.	Rs.	A.	P.	A.	R.	P	Rs.	A.	P.
Baka Barda	95	3	28	12,893	10	0	...	...	...	63	5	8	95	3	28	12,956	15	8
Garhakotah	28	2	25	7,698	0	6	...	...	...	...	...	...	28	2	25	7,698	0	6
Hathibari	130	0	0	22,813	0	3	...	...	...	166	...	...	130	0	0	22,979	0	3
Sonawani	1	0	17	781	4	9	...	...	...	...	...	...	1	0	17	781	4	9
Sackata	5	1	7	1,703	11	5	...	...	...	...	...	...	5	1	7	1,703	11	5
Telinkherri	27	1	10	830	13	11	13	13	0	159	7	1	40	1	10	990	5	0
Total ...	288	1	7	46,720	8	10	13	13	0	388	12	9	301	1	7	47,109	5	7

No. 4.

Area of Forest tracts under protection from fire.

Forest tracts.	Area in 1872-73.	Total cost.			Additional area protected in 1873-74.	Amount expended in 1873-74.			Total area protected up to 1873-74.	Total expenditure incurred up to 1873-74.			REMARKS.
		Rs.	a.	p.		Rs.	a.	p.		Rs.	a.	p.	
Bijeragogarh	20480·	911	13	11	...	212	12	10	20480·	1,124	10	9	Protected from 1st June 1871.
Sigrampur	6555·	553	7	11	...	260	15	6	6555·	814	7	5	Do. do.
Barela	6446·	171	12	6	...	241	7	4	6446·	413	3	10	Do. from June 1872.
Jagmandal	35200·	14,345	15	8	...	841	7	11	35200·	15,187	7	7	Do. from June 1867.
Choharigogarh	3200·	3,924	8	11	...	142	12	6	3200·	4,067	5	5	Do. do.
Bori	23680·	7,686	4	1	...	699	5	6	23680·	8,385	9	7	Do. from June 1864.
Hathibari	2123·75	1,581	6	9	...	147	11	9	2123·75	1,729	2	6	Do. from June 1870.
Satpura	31210·	2,073	11	0	...	855	14	4	31210·	2,929	9	4	1,240 acres from June 1869, remainder from June 1871.
Punassa (block No. 1) ...	7680·	36	0	0	...	...	..	...	7680·	36	0	0	Protection failed.
Nos. 3 and 4 Divisions of Bemaram tracts of Ahiri Forests...	6476·	475	14	7	...	414	11	11	6476·	890	10	6	Protected from June 1872.
Moharli...	...	...	...	...	22,400	108	13	10	22400·	108	13	10	Protection attempted in 1873-74 but failed.
Total ...	143050·75	31,760	15	4	22,400	3,926	1	5	165450·75	35,687	0	9	
									Deduct area burnt ...	31990·			
									Balance area actually prevented from fire ...	133460·75			

No. 5.

Prosecutions for breaches of the Forest Rules.

Nature of Offences.	Injury done to forest by fire.		Unauthorized felling or appropriation of timber.		Unauthorized appropriation of minor forest produce.		Grazing without permission or in tract in which grazing is prohibited.		Unauthorized breaking up of forest land for cultivation.		Total.		
											Number of prosecutions.		Convictions obtained.
Divisions and Districts	No. of cases.	No. of persons.	No. of cases.	No. of persons.	No. of cases.	No. of persons.	No. of cases.	No. of persons.	No. of cases.	No. of persons.	No. of cases.	No. of persons.	No. of persons convicted.
Northern Division ...	...	...	...	...	...	..	...	...	...	...	...	...	...
Western Division ...	...	..	10	30	...	...	...	...	1	3	11	33	33
Southern Division ...	.	...	...	...	...	...	..	..	...	...	...	...	...
Central Division ...	..	..	...	..	5	8	...	...	...	...	5	8	8
Sagar Division ...	1	4	...	...	6	10	..	..	...	..	7	14	14
Eastern Division ...	..	...	...	...	...	...	...	..	..	...	...	..	...
Nagpur District ...	...	..	2	5	..	...	...	...	...	...	2	5	5
Bhandara „ ...	..	...	9	21	..	...	...	...	..	...	9	21	21
Chanda „ ...	...	...	11	34	...	...	...	...	...	...	11	34	19
Wardah „ ...	...	..	2	6	...	..	...	...	...	..	2	6	6
Balaghat „ ...	...	...	11	44	...	..	...	...	...	...	11	44	37
Jabalpur „ ...	...	..	7	19	...	..	..	...	...	...	7	19	12
Sagar „ ...	1	...	17	..	3	...	...	...	...	...	21	53	45
Damoh „ ...	...	..	4	7	2	4	4	10	...	...	10	21	19
Seoni „ ...	..	..	23	57	...	...	...	...	7	13	30	70	51
Mandla „ ...	1	2	4	4	...	..	...	...	..	...	5	6	4
Betul „ ..	...	..	60	75	17	22	21	21	..	...	98	118	89
Chhindwara „ ...	...	...	20	42	...	...	...	...	...	..	20	42	40
Hoshangabad „ ...	..	.	28	50	8	17	1	1	...	...	37	68	59
Narsinghpur „ ...	...	...	7	8	...	...	...	...	..	...	7	8	7
Nimar „ ...	..	...	8	...	3	...	1	...	..	...	12	19	18
Raipur „ ...	...	...	6	12	...	..	...	...	...	...	6	12	11
Bilaspur „ ...	..	...	31	64	...	..	1	2	...	...	32	66	62
Sironcha „ ...	1	2	10	22	...	...	...	..	...	...	11	24	23
Total ..	4	8	270	500	44	61	28	34	8	16	354	693	583

F. O. Z.—30—287—600

FORM A.

General State Forest Return for 1873-74.

F No.	Name of Forest	Area in acres.	External Boundary. Length in miles.	External Boundary. Cost of maintenance. Rs.	A.	P.	Internal Boundary. Length in miles.	Internal Boundary. Cost of maintenance. Rs.	A.	P.	Number of cattle permitted to graze.	Population, including women and children.	Area protected from fire.	Area cleared of parasites and creepers.	Area in which matured timber has been cut.	Area from which bamboos and other minor products have been removed.	Estimated quantity in tons of wood and bamboos extracted both by Government agency and purchasers.	Total expenditure on forest, including share of Deputy Conservator's salary. Rs.	A.	P.	Income of the forest from all sources. Rs.	A.	P.
	Northern Division.																						
1	Bijeragogarh ...	20,480	44·25	124	12	10	...	...	...	..	...	...	20,480	...	...	...	...	7,086	10	7	149	10	9
2	Barela ...	6,446	14·25	154	10	6	...	...	...	...	...	...	6,446	...	...	...	...	1,182	2	4	...	...	..
3	Jagmandal ...	35,200	41·	325	11	9	...	...	...	...	...	...	35,200	...	...	...	...	3,448	14	7	6,993	11	1
4	Choharigogarh ...	3,200	6·03	82	12	6	...	...	...	...	...	...	3,200	...	...	..	...	1,792	12	0	...	...	..
5	Sigrampur ...	6,555	22·50	164	15	6	...	...	...	...	..	25	6,555	...	...	...	...	1,339	14	10	29	11	0
6	Sal forest ...	..	...	...	...	...	...	...	..	..	...	...	...	...	...	...	415 ½	25,658	10	3	1,387	0	0
	Western Division.																						
7	Bori ...	23,680	28·25	250	10	0	19·25	45	11	6	...	...	23,680	...	...	...	37	8,823	3	11	3,385	2	11
8	Bowargarh ...	75,520	72·50	62	9	0	14·	...	...	...	5,868	683	...	...	...	44,160	108	2,621	13	11	1,977	12	9
9	Kalibheet ...	166,400	78·	189	12	0	16·	...	...	...	6,839	3,242	..	...	...	166,400	1,554	4,116	3	3	14,685	10	7
10	Raja Borari ...	160,000	98·	49	5	6	26·	...	...	...	19,262	4,437	...	...	...	160,000	1,275	4,758	1	2	13,298	0	0
11	Kamapur ...	106,240	167·	378	8	0	21·50	...	...	.	7,084	1,325	...	..	...	106,240	780 ½	3,089	14	3	5,762	9	3
12	Saoligarh ...	64,000	100·	37	8	0	137·	...	...	...	10,777	269	...	...	..	64,000	1,622 ½	5,324	14	0	6,294	10	5
13	Punassa] ...	91,720	81·	...	...	...	45·	..	.	...	...	...	...	...	..	60,000	274	8,031	2	5	2,806	1	6
	Central Division.																						
14	Satapura ...	291,931	324·	335	2	3	247·25	...	...	...	17,036	427	31,210	...	10,369	143,731	2,139 ½	19,772	12	8	11,639	6	2

Eastern Division.																								
15 Hathibari	...	2,123·75	7·50	147	11	9	...	...	...	...	33	2123·75	...	..	...	...	3,122	11	5	4,676	7	6
16 Kantara Nala	...	3,548	6·12	167	8	0	...	...	...	...	2	...	..	..	...	...	562	12	8	...	...	..
Sagar Division.																								
17 Garhakota	...	2,899	10·	100	0	0	...	...	...	...	953	22	...	...	2,899	2,899	·648 ½	1,834	3	10	2,905	2	2
18 Tigora	...	459	3·	82	9	9	...	...	..	...	104	...	..	...	...	459	13	1,380	15	4	90	2	1
19 Ranjir	...	9,481	33·60	336	11	5	10·	...	...	...	2,466	86	...	...	...	9,481	382 ½	1,675	13	10	718	6	5
20 Ranipura	...	7,386	44·12	277	0	0	...	...	...	...	9,641	...	...	...	...	7,386	324 ½	1,779	12	8	780	12	3
21 Hutbku	...	18,558	126·	396	0	0	.	...	..	...	5,645	..	..	..	...	18,558	430 ½	1,751	6	10	1,042	2	11
Southern Division.																								
22 Moharli	...	96,000	116·75	...	...	..	14·	...	...	...	...	333	...	...	...	48,000	1900 ½	4,408	1	0	3,606	3	7
23 Aheri forests	...	20,876	....	...	..	..	...	..	...	...	...	..	...	...	..	...	688	70,914	11	2	19,063	5	8
Balaghat District.																								
24 Pandratola	..	4,960	17·	...	...	...	...	...	...	...	..	...	...	..	..	...	...	...	...	...	...	...	...	...

FORM B.

Return showing the quantity of Forest produce removed by purchasers from State Forests during the year 1873-74.

No.	Name of Reserve.	Small building wood.			Number of Bamboos.	Manufactured produce.			Fuel.		Grass.		Lac, Gum, Fruits, Fibers &c.	
		Number of logs.	2 bullock carts.	4 bullock carts.		Number of cart axles.	Number of mats.	Number of Baskets.	2 bullock carts.	4 bullock carts.	2 bullock carts.	4 bullock carts.	2 bullock carts.	4 bullock carts.
	Western Division.													
8	Bowargarh	266	9	2	970	...	...	...	...	...	25	...	...	...
9	Kalibheet	183	2,948	2	2,888	...	...	1,560	3	...	...	...	...	...
10	Raja Borari	37	1,171	155	141,348	...	...	12,960	275	50	54	4	...	...
11	Kamapur	162	1,219	...	44,000	...	...	...	...	...	90	13	...	...
12	Sowligarh	2,504	265	79	179,472	...	...	2,860	11	...	107	15	47	8
13	Punassa	...	229	3	49,000	...	...	700	...	...	77	...	...	..
	Central Division.													
14	Satpura : Sonawani ...	...	41	....	93,746	...	...	...	370	...	4,238	...	...	...
	Satpura : Korai ...	...	...	...	119,662	...	...	...	361	...	2,361	...	...	...
	Satpura : Western ...	...	24	...	47,385	...	...	...	689	...	1,999	...	...	...
	Sagar Division.													
17	Garhakotah	163	16	...	...	...	...	...	1,007	...	...	...	...	...
18	Tigora	3	...	...	...	...	...	...	22	...	...	...	...	...
19	Ranjir	...	11	...	...	...	...	...	754	...	19	...	...	...
20	Ranipura	...	125	...	...	...	...	...	524	...	46	...	...	...
21	Hutku	..	78	...	...	...	...	...	783	...	141	...	...	...
	Southern Division.													
22	Moharli	...	805	...	326,047	32,987	15,601	17,679	301	..	4,858	...	60	...
	Total ...	3,318	6,941	241	1,004,518	32,987	15,601	35,759	5,100	50	14,015	32	107	8
	Estimated equivalent in tons.		4,903¾		2,511½	441½	68	32	2,586		3,380¾		...	...

(REVISED.)

No. 21.

FOREST DEPARTMENT, CENTRAL PROVINCES.

Annual Summary of Revenue and Expenditure in the different Divisions during the year 1873-74.

Classification.	Direction.			Northern Division.			Western Division.			Southern Division.			Eastern Division.			Central Division.		
RECEIPTS.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.
I. Sale of timber at Depôts	..	..	..	8,341	6	7	5,046	15	6	19,090	4	8	4,670	1	6	4,410	5	1
II. Sale of timber, removed by purchasers	..	..	..	107	4	9	22,752	4	0	2,915	13	3	..	..	..	2,300	2	10
III. Duty on foreign timber	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
IV. Permit fees	..	..	..	49	1	0	8,743	12	0	..	..	..	..	..	..	389	10	3
V. Grazing dues	..	..	..	..	..	..	8,560	0	1	..	..	..	..	..	..	2,847	7	3
VI. Sale of fruits, &c.	2,165	10	3	7	0	0	2,212	10	0	654	0	10	..	..	..	1,327	9	5
VII. Sale of confiscated timber	..	..	..	..	..	..	130	6	6	0	5	0	..	..	..	..	..	..
VIII. Fines and forfeitures	..	..	..	11	8	0	6	8	9	3	0	0	..	..	..	322	13	4
IX. Miscellaneous	569	11	9	43	12	6	757	6	7	6	1	6	6	6	0	41	6	0
Total Receipts	2,735	6	0	8,560	0	10	48,209	15	5	22,669	9	3	4,676	7	6	11,639	6	2
EXPENDITURE.																		
CONSERVANCY AND WORKING.																		
I. Timber expenses	..	..	..	11,026	8	2	4,930	7	6	34,688	13	11	398	9	0	5,537	6	7
II. Purchases of Stock and Cattle	527	0	0	1,989	5	10	322	14	0	5,129	1	0	..	..	..	53	11	1
III. Feed and keep of Cattle	453	12	10	1,891	15	6	1,122	14	7	10,054	11	7	..	..	..	974	4	7
IV. Rent of leased Forests	891	4	0	..	..	..	..	..	..	5,900	0	0	..	..	..	..	..	..
V. Charges in collecting revenue on grass, &c.	..	..	..	5	12	9	..	..	..	902	11	0	..	..	..	..	..	..
VI. Plantations.	2,535	13	10	8	11	10	63	5	8	64	15	7	166	0	0	..	..	..
VII. Forest work	..	..	..	5,077	0	9	3,997	3	11	727	13	9	594	8	5	3,546	2	7
VIII. Forest Survey	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
IX. Experiments on timber	..	..	..	6	0	0	..	..	..	..	..	..	..	..	..	123	11	6
X. Communications and Buildings	..	..	..	2,812	12	0	252	8	6	238	7	0	..	..	..	62	4	0
Total Conservancy and Working	4,407	14	8	22,818	2	10	10,689	6	2	56,806	9	10	1,159	1	5	10,297	8	4
ESTABLISHMENTS.																		
I. Salaries	18,525	9	5	14,220	9	0	21,814	13	1	13,208	0	0	2,170	0	0	7,200	14	11
II. Allowances	2,488	11	10	1,918	3	4	2,791	7	5	4,369	12	5	105	6	3	1,705	6	9
III. Contingencies	1,514	10	10	1,565	14	3	1,469	10	3	938	5	11	251	0	5	568	14	8
Total Establishments	22,529	0	1	17,704	10	7	26,075	14	9	18,516	2	4	2,526	6	8	9,475	4	4
GRAND TOTAL EXPENDITURE.	26,936	14	9	40,522	13	5	36,765	4	11	75,322	12	2	3,685	8	1	19,772	12	8

H W E N—3 1u 600

No. 21.—(*Continued.*)

Classification.	Sagar Division.			Total.			District Forests.			Grand Total.		
RECEIPTS.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.
I. Sale of timber at Depôts ...	1,349	9	0	42,908	10	4	14,213	12	3	57,122	6	7
II. Sale of timber removed by purchasers	1,035	15	11	29,111	8	9	51,747	1	2	80,858	9	11
III. Duty on foreign timber ...	...	...	...	...	...	...	...	...	...	...	...	...
IV. Permit fees ...	504	15	4	9,687	6	7	2,35,031	6	3	2,44,718	12	10
V. Grazing dues ...	1,634	15	11	13,042	7	3	1,05,140	12	11	1,18,183	4	2
VI. Sale of fruits, &c. ...	863	8	1	7,230	6	7	49,463	7	9	56,693	14	4
VII. Sale of confiscated timber ...	...	...	...	130	11	6	730	6	8	861	2	2
VIII. Fines and forfeitures ...	1	0	0	344	14	1	1,257	8	5	1,602	6	6
IX. Miscellaneous ...	146	9	7	1,571	5	11	6,755	2	3	8,326	8	2
Total Receipts ...	5,536	9	10	1,04,027	7	0	4,64,339	9	8	5,68,367	0	8
EXPENDITURE.												
CONSERVANCY AND WORKING.												
I. Timber expenses ...	45	14	10	56,627	12	0	2,092	2	5	58,719	14	5
II. Purchases of Stock and Cattle ...	473	11	9	8,495	11	8	78	11	3	8,574	6	11
III. Feed and keep of Cattle ...	9	13	1	14,507	8	2	1	8	6	14,509	0	2
IV. Rent of leased Forests ...	...	...	...	5,891	4	0	...	...	...	5,891	4	0
V. Charges in collecting revenue on grass, &c. ...	2	12	0	911	3	9	52,917	15	0	53,829	2	9
VI. Plantations ...	...	...	...	2,838	14	11	629	6	9	3,468	5	8
VII. Forest-work ...	1,634	10	0	15,577	7	5	...	...	...	15,577	7	5
VIII. Forest Survey ...	...	...	...	...	...	...	...	...	...	...	...	...
IX. Experiments on timber ...	62	9	3	132	4	9	...	...	...	132	4	9
X. Communications and Buildings ...	70	10	3	3,436	9	9	2,871	14	2	6,308	7	11
Total Conservancy and Working ...	2,240	1	2	1,08,418	12	5	58,591	9	7	1,67,010	6	0
ESTABLISHMENTS.												
I. Salaries ...	4,065	8	9	81,205	7	2	11,211	0	1	92,416	7	3
II. Allowances ...	1,390	15	0	14,769	15	0	...	...	...	14,769	15	0
III. Contingencies ...	725	11	7	7,034	3	11	2,326	8	6	9,360	12	5
Total Establishments ...	6,182	3	4	1,03,009	10	1	13,537	8	7	1,16,547	2	8
GRAND TOTAL EXPENDITURE ...	8,422	4	6	2,11,428	6	6	72,129	2	2	2,83,557	8	8

(REVISED.)

No. 22.

FOREST DEPARTMENT, CENTRAL PROVINCES.

Dr. *Annual Abstract Account of the cash transactions of the Forest Department in the Central Provinces for the year 1873-74.* Cr.

Heads of account.	Amount.			Heads of account.	Amount.		
	Rs.	A.	P.		Rs.	A.	P.
To Cash in hand on 1st April 1873	23,474	14	8	By Expenditure of the Department	2,83,557	8	8
„ Revenue received	5,68,367	0	8	„ Expenditure chargeable to Provincial Services on account of forms printed & Office rent	1,630	10	0
„ Remittances from State Treasuries	2,67,618	8	4	„ Remittances to State Treasuries	5,44,602	13	2
„ Advances recovered	62,229	6	2	*Government of North-West Provinces.*			
„ Work done by Department Public Works, adjusted by book transfer	4,093	3	0	„ Remittances to Allahabad Treasury	250	0	0
Central Jail, Nagpur.				*Government of India.*			
„ Book transfer on account of Forms printed	12	8	0	„ Book transfer on account of timber supplied to Department Public Works, Holkar "State Railway"	2,012	0	0
School of Industry, Jabalpur.				*Central Provinces.*			
„ Book transfer on account of supply of tents	966	9	9	„ Book transfer on account of timber supplied to Department Public Works	22,084	2	2
Government of India.				„ Advances made	62,220	6	3
„ Uncovenanted family pension Fund	1,326	6	0	„ Refund of Revenue	105	10	9
„ Military Fund	660	7	10	„ Cash balance in hand on 31st March 1874	13,162	8	1
Government of Bombay.							
Book transfer on account of an advance and passage money	876	10	8				
Total	9,29,625	11	1	Total	9,29,625	11	1

Examined and found correct except under remittance heads, in which the differences have been explained in my No. B-77, dated 18th June 1874.

J. WESTLAND,
Acct. General, Central Provinces.

No. 23.

FOREST DEPARTMENT, CENTRAL PROVINCES.

Annual Statement of Outstandings and Liabilities of the Department on account of Contractors and Disbursers for 1873-74.

Division.	Department Debtor.									Department Creditor.										Balances due.					
	At commencement of year.			Recoveries in cash and value of supplies, and work done during year.			At close of year.			At commencement of year.			Payments made during year.			At close of year.				To Department (outstandings.)			By Department (liabilities.)		
	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.		Rs.	A.	P.	Rs.	A.	P.
Direction	...	...	...	1,905	15	4	1,905	15	4	42	2	0	1,863	13	4	1,905	15	4		...	...	...	...	...	...
Northern Division	2,561	3	6	580	12	0	3,141	15	6	29,117	9	5	940	0	0	30,057	9	5		29,476	13	5	2,561	3	6
Western Division	...	...	...	3,298	12	3	3,298	12	3	1,788	12	3	3,426	4	9	5,215	1	0		1,916	4	9	...	...	...
Southern Division	...	...	...	56,141	2	5	56,141	2	5	2,080	15	3	53,711	4	6	55,792	3	9		2,014	2	5	2,363	1	1
Eastern Division	...	...	...	35	12	8	35	12	8	538	2	1	31	8	0	569	10	1		533	13	5	...	...	...
Central Division	...	...	...	490	9	1	490	9	1	111	15	0	523	2	3	635	1	3		144	8	2	...	...	...
	2,561	3	6	62,452	15	9	65,014	3	3	33,679	8	0	60,496	0	10	94,175	8	10		34,085	10	2	4,924	4	7
District Forests	...	...	...	...	...	...	...	...	...	1,100	0	0	...	...	...	1,100	0	0		1,100	...	...	...	...	...
Total	2,561	3	6	62,452	15	9	65,014	3	3	34,779	8	0	60,496	0	10	95,275	8	10		35,185	10	2	4,924	4	7
Deduct outstandings on account of previous years																				34,779	8	0	2,561	3	6
Balance on account of the year																				406	2	2	2,363	1	1
Add outstandings on account of sales as per Form No. 23 A.																				17,228	3	5	...	...	...
Total																				17,634	5	7	2,263	1	1

No. 23-A.

FOREST DEPARTMENT, CENTRAL PROVINCES.

Annual Statement of outstandings on sale accounts for 1873-74.

Divisions.	Outstanding at commencement of the year.			Value of sales during the year.			Total.			Recoveries made during the year.			Written off to profit and loss.			Balance outstanding.			Remarks.
	Rs.	a.	p.	Rs.	a.	p.	Rs.	a.	p.	Rs.	a.	p.	Rs.	a.	p	Rs.	a	p.	
Direction	207	10	0	2,545	8	0	2,753	2	0	2,735	6	0	...	...	...	17	12	0	
Northern Division	2,152	13	10	8,506	6	7	10,659	4	5	8,560	0	10	*245	0	7	1,854	3	0	*Rs. 200 0 0 sanctioned *vide* No. 802-42 of 10th March 1874, from the Secretary to the Chief Commissioner, Central Provinces. 45 0 7 allowance made for the defection of timber sold. 245 0 7
Western Division	...	...	...	54,363	15	5	54,363	15	5	48,209	15	5	...	...	...	6,154	0	0	
Southern Division	...	...	...	33,598	4	0	33,598	4	0	22,669	9	3	...	...	...	10,928	10	9	
Eastern Division	170	0	0	4,506	7	6	4,676	7	6	4,676	7	6	...	...	...	...	...	...	
Central Division	103	13	8	11,540	8	6	11,644	6	2	11,639	6	2	...	...	...	5	0	0	
Sagar Division	232	0	0	5,390	15	3	5,622	15	3	5,536	9	10	...	...	...	86	5	5	
Total	2,866	5	6	120,452	1	3	123,318	6	9	104,027	7	0	245	0	7	19,045	15	2	

Deduct amount recovered on account of former years plus amount written off as per column six	1,048	9	9	Deduct Balance outstanding on account of former years ...	1,817	11	9
Balance outstanding on account of previous years	1,817	11	9	Balance outstanding on account of the year	17,228	3	5

B E F N—4—23—600

FOREST DEPARTMENT, CENTRAL PROVINCES.

Statment of Timber brought to Depots from the different Forest Divisions during 1873-74.

Name of River or Division.	Forest.	Description of Timber.	Pieces.	Cubic Feet.			Totals of each River: Pieces.	Totals of each River: Cubic feet.			Remarks.
Northern Division	Birmanghat	Teak logs	1	14	0	0					
do.	Sakrighat	Sal sleepers	84	210	0	0					
do.	Gowarighat	do.	3	8	0	0					
do.	Kisli	Sal timber	50	259	0	0					
do.	Indri	do.	182	2,062	0	0					
do.	Mocha	do.	131	2,620		0					
do.	Telri	do.	281	7,86		0					
do.	Sakrighat	Bamboos	54,446	...	...	...					
do.	Gowarighat	Bamboos	9,414	...	...	...	64,592	13,035	0	0	
Western Division	Punassa	Anjun sleepers	1,312	1,705	0	0					
do.	Raja Borari	Hurdoo do.	481	625	0	0					
do.	Bori	do.	660	858	0	0					
do.	Sowligarh	Bijasal do.	1,240	1,612	0	0					
do.	Bori	Dowra do.	763	991	0	0	4,456	5,791	0	0	
Southern Division	Allapili	Teak logs	1,776	27,521	0	0					By conversion of rough timber on stock.
do.	do.	Teak logs square	722	8,305	0	0					
do.	do.	Teak sleepers	7,491	23,402	0	0					
do.	do.	Sleepers length	7	60	0	0					
do.	do.	Teak scantlings	8,178	14,044	0	0					
do.	do.	Teak planks	2,663	1,688	0	0					
do.	Nagpur	do.	36	36	0	0					
do.	Moharli	Bamboos	3,000	...	...	...	23,873	75,056	0	0	
Central Division	Korai	Bijalogs	6	1,720	0	0					
do.	Sonawani	do.	80								
do.	Korai	Saj logs	38	1,080	0	0					
do.	Kamthi	do.	15								
do.	Sakata	do.	1	...	...	...					
do.	Kamthi	Saj bullies & golas	699	...	...	...					
do.	Korai	do.	2,308	...	...	...					
do.	Kamthi	Saj khakers	770	...	...	...					
do.	do.	Teak khakers	855	...	...	...					
do.	Korai	do.	513	...	...	...					
do.	do.	Dhooras	994	...	...	...					
do.	do.	Askoots	511	...	...	...					
do.	Nagpur	Golas	100	...	...	...					
do.	Kamthi	Bamboos	26,759	...	...	...					
do.	Korai	do.	63,712	...	...	...					
do.	Sorata	do.	3,564	...	...	...					
do.	Nagpur	do.	600	...	...	...					
do.	Rairow	do.	10,000	...	...	...					
do.	Salama	do.	5,100	...	...	...					
do.	Nagalwari	do.	7,025	...	...	...					
do.	Ganji nala	do.	7,750	...	...	...					
do.	Ram Rama	do.	15,000	...	...	...	146,400	2,300	0	0	
Sagar Division	Garhakota	Teak logs	103	1,124	0	0					
do.		Rohana logs	46	807	0	0					
do.		Chirolf logs	1	64	0	0					
do.		Kaim logs	8	146	0	0					
do.	Tigora	do.	3	34	0	0					
do.	Garhakota	Teak bullies	78	259	0	0					
do.		Teak Mulga	113	...	...	...					
do.		Koonias	50	...	...	...					
do.		Korian	300	...	...	...					
do.		Saj bullies	1	...	...	...					
do.		Teak chooria	9	17	0	0	717	2,451	0	0	
							240,038	99,133	0	0	

No. 25.

FOREST DEPARTMENT, CENTRAL PROVINCES.

Annual Timber Account of 1873-74.

Particulars.	Pieces.	Total.	Particulars.	Pieces.	Total.
I.—Stock in hand at the following depots at the commencement of the year :—			I.—Timber removed by purchasers from depots :—		
Northern Division ...	11,690		Northern Division ...	56,172	
Western „ ...	11,318		Western „ ...	5,575	
Eastern „ ...	420		Southern „ ...	7,286	
Central „ ...	333		Eastern „ ...	266	
Ahiri „ ...	16,611	40,372	Central „ ...	76,878	
			Sagar „ ...	717	149,894
II.—Timber received at depots from the forests during 1873-74 as per Form No. 24 :—			II.—Timber lost :—		
Northern Division ...	64,592		Northern Division=by rejection ...	4,847	
Western „ ...	4,456		Western „ =by flood and burnt ...	140	
Southern „ ...	23,873		Southern „ =by conversion into sleepers.	4,139	
Eastern „ ...	...		Central „ =by used and lost ...	910	10,036
Central „ ...	146,400				
Sagar „ ...	717	240,038	III.—Stock in hand at the close of the year at the following depots :—		
			Northern Division ...	15,263	
			Western „ ...	10,059	
			Southern „ ...	29,059	
			Eastern „ ...	154	
			Central „ ...	74,943	
			Sagar „ ...	...	129,480
Total pieces ...	...	280,410	Total pieces ...	...	280,410

No. 25.

FOREST DEPARTMENT, CENTRAL PROVINCES.

Abstract of Annual Timber Account for 1873-74.

Description of timber.	No. of pieces.	Cubic feet.	Rate per 100 C.ft.	Value. Rs.	A.	P.	Total. Rs.	A.	P.
OPENING BALANCE.									
Teak logs	14,951	192,283	0 0	97,553	13	11			
Sal logs	27	353	0 0	265	5	2			
Teak sleepers	11,155	34,695	0 0	23,162	10	0			
Sal sleepers	12,023	29,107	0 0	47,686	6	0			
Hurdoo sleepers	1,006	1,307	0 0	1,760	8	0			
Teak stumps	202	650	0 0	203	2	0			
Teak scantlings	916	951	0 0	801	0	4			
Teak planks	75	126	0 0	290	14	10			
Shishum logs	11	224	0 0	168	12	0			
Teak square logs	6	85	0 0	170	14	2			
	40,372	259,781	0 0				1,72,063	7	5
RECEIVED DURING THE YEAR.									
Teak logs	1,885	28,659	0 0	21,698	6	7			
Sal logs	644	12,803	0 0	9,602	2	2			
Teak sleepers	7,491	23,402	0 0	11,236	8	0			
Sal sleepers	87	218	0 0	351	0	0			
Anjun sleepers	1,312	1,705	0 0	2,296	0	0			
Hurdoo sleepers	1,141	1,483	0 0	1,426	4	0			
Bijasal sleepers	1,240	1,612	0 0	1,550	0	0			
Dowra sleepers	763	991	0 0	953	12	0			
Teak sleepers length	7	60	0 0	119	8	0			
Teak scantlings	8,178	14,044	0 0	7,022	3	0			
Teak planks	2,699	1,724	0 0	1,278	6	5			

Description of timber.	No. of pieces.	Cubic feet.	Rate per 100 C.ft.	Value. Rs.	A.	P.	Total. Rs.	A.	P.
SALE.									
Teak logs	2,603	34,924	0 0	30,018	3	11			
Sal sleepers	311	767	0 0	1,432	0	0			
Teak sleepers	2,364	7,309	0 0	11,056	11	0			
Teak logs squared	41	968	0 0	2,270	7	4			
Teak scantlings	889	1,074	0 0	1,157	4	10			
Hurdoo Sleepers	1,051	1,365	0 0	2,102	0	0			
Teak planks	616	210	0 0	338	10	11			
Anjun sleepers	1,293	1,681	0 0	2,586	0	0			
Bija logs	8	160	0 0	126	13	0			
Saj logs	18	360	0 0	270	8	0			
			Rs. A. P. 113 13 1						
Bija sal sleepers	1,000	1,300	0 0	2,000	0	0			
Saj bullies and golas	174	...	...	442	12	0			
Ascoots	62	...	...	14	9	0			
Dowra sleepers	739	960	0 0	1,478	0	0			
Saj khakers	258	...	...	80	2	0			
Golas	100	...	...	23	0	0			
Teak bullies	78	261	0 0	69	3	0			
Teak khakers	424	...	...	254	4	0			
Teak mulgas	113	...	...	12	2	0			
Rohna logs	46	807	0 0	178	5	3			
Dhooras	85	...	...	43	8	0			
Teak choorias	9	17	0 0	2	1	6			
Teak koonias	50	...	...	3	0	0			

Teak logs, squared.	722	8,305	0	0	Rs. A. P. 77 11 2	10,380	13	8					Kaim logs	11	180	0	0	Rs. A. P. 97 2 0	29	8	3			
Saj logs ...	54	1,080	0	0		803	0	0					Teak korians ...	300	...	...	...		9	0	0			
Bija logs ...	86	1,720	0	0		760	0	0					Cheroli logs ...	1	64	0	0		4	0	0			
Saj bullies ...	3,008	...	...	...		2,954	8	0					Bamboos ...	128,250	...	...	...		3,672	1	5			
Saj khakers ...	770	...	...	...		288	12	0						140,894	52,407	0	0					59,674	3	5
Teak khakers ...	1,368	...	...	...		530	1	7																
Dhooras ...	994	...	...	...		186	6	0					LOST.											
Ascoots ...	511	...	...	...		47	14	6																
Golas ...	100	...	...	...		23	0	0					Reduction by remeasurement ...	...	427	0	0	Rs. A. P. 52 2 5	737	5	3			
Rohna logs ...	46	807	0	0		178	5	3					Teak logs—by rejection ...	15	533	0	0		1,056	6	9			
Kaim logs ...	11	180	0	0		29	8	3					Sal sleepers—by do. ...	10	27	0	0		44	0	0			
Teak bullies ...	78	259	0	0		69	3	0					Bijasal sleepers—by burning.	40	52	0	0		50	0	0			
Teak choorias ...	9	17	0	0		2	1	6					Teak logs—by flood ...	100	919	0	0		172	5	0			
Teak mulgas ...	113	...	...	...		12	2	0					Saj golas and bullies—by use ...	24	...	...	...		40	0	0			
Teak koonias ...	50	...	...	...		3	0	0					Saj khakers—by use ...	45	...	...	...		16	4	0			
Teak korian ...	300	...	...	...		9	0	0					Teak log—sby lost ...	1	16	0	0		16	0	0			
Cheroli logs ...	1	64	0	0		4	0	0					Bamboos—by lost ...	5,662	...	...	...		61	7	11			
Bamboos ...	206,370	...	...	...		3,235	14	9					Teak logs—converted into sleepers &c. ...	4,139	70,706	0	0		35,710	6	1			
	240,038	99,133	0	0					77,051	12	6			10,036	72,680	0	0					37,904	3	0
Increase by remeasurements ...	...	179	0	0	Rs. A. P. 117 5 1	210	11	7																
	...	179	0	0					210	11	7		CLOSING BALANCE.											
													Teak logs ...	9,940	112,594	0	0	Rs. A. P. 97 2 0	79,853	1	6			
													Sal sleepers ...	11,789	28,531	0	0		55,302	10	0			
													Teak sleepers ...	16,282	50,788	0	0		51,510	10	0			
													Sal timber ...	644	12,803	0	0		9,602	2	0			
													Hurdoo sleepers ...	1,096	1,425	0	0		1,800	8	0			
													Anjun sleepers ...	19	24	0	0		33	4	0			
													Teak logs squared ...	725	8,384	0	0		10,579	0	10			
													Dowra sleepers ...	24	31	0	0		30	0	0			
													Bijasal sleepers ...	200	260	0	0		250	0	0			
													Teak scantlings ...	8,205	13,952	0	0		7,941	1	0			
Increase in the value of stock on being transported to stations from depots near the forests. ...	...	...	...	...		75,534	10	7					Teak planks ...	2,158	1,630	0	0		1,949	9	3			
									75,534	10	7													

A. E. O. W.—4—20—600

No. 25:—*Continued.*

Description of timber.	No. of pieces.	Cubic feet.		Rate per 100 C.ft.	Value.	Total.		Description of timber.	No. of pieces.	Cubic feet.		Rate per 100 C.ft.	Value.			Total.		
													Rs.	A.	P.			
								Shishum logs ...	11	240	0 0	Rs. 97-2-0.	180	2	0			
								Teak sleepers in length...	7	60	0 0		119	8	0			
								Sal logs ...	27	354	0 0		176	14	9			
								Bija logs ...	36	720	0 0		533	0	0			
								Saj bullies and golas ...	2,810	...	... ...		3,317	4	0			
								Saj khakers ...	467	...	... ...		178	6	0			
								Teak khakers ...	944	...	... ...		339	9	7			
								Dhooras ...	909	...	... ...		348	4	0			
								Ascoots ...	449	...	... ...		81	13	6			
								Teak stumps ...	202	650	0 0		203	2	0			
								Bamboos ...	72,458	....	... ..		1,884	5	3			
									129,480	234,006	0 0					2,27,282	3	8
	280,410	359,093	0 0			324,860	10 1		280,410	359,093	0 0					3,24,860	10	1

		Rs.	A.	P.	
NOTE—Value of stock at close of the year	..	2,27,282	3	8	
Value of stock at commencement of the year	...	1,72,063	7	5	
Difference	..	55,218	12	3	In favour of the year.
Deduct difference in value of other stock *vide* Form No. 25A	...	1,445	5	10	Against the year.
Net difference in value of all stock	..	53,778	6	5	In favour of the year.

No. 25 A.

FOREST DEPARTMENT, CENTRAL PROVINCES.

Abstract showing the value of live and dead stock for the year 1873-74.

	On hand at commencement of the year.				Value of receipts during the year.				Total.				Loss by death and deterioration in value.				Value of balance in hand at close of the year.				Difference.					
																					More.			Less.		
	Nos.	Value.			Nos.	Value.			Nos.	Value.			Nos.	Value.			Nos.	Value.								
		Rs.	A.	P.		Rs.	A.	P.		Rs.	A.	P.		Rs.	A.	P.		Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.
Elephants	13	21,175	0	0	...	...	...	...	13	21,175	0	0	1	1,500	0	0	12	19,675	0	0	...	...	...	1,500	0	0
Other live stock	187	5,463	4	9	143	2,153	12	0	330	7,617	0	9	59	2,595	0	0	271	5,022	0	9	...	...	...	441	4	0
Machinery	...	7,769	2	2	...	4,000	0	0	...	11,769	2	2	...	776	0	0	...	10,993	2	2	3,224	0	0	...	...	...
Other dead stock	...	35,415	14	10	...	2,523	5	10	...	37,939	4	8	...	5,251	7	8	...	32,687	13	0	...	...	...	2,728	1	10
Total	...	69,823	5	9	...	8,677	1	10	...	78,500	7	7	...	10,122	7	8	...	68,377	15	11	3,224	0	0	4,669	5	10

NOTE.—Value of stock at commencement of the year, Rs. 69,823 5 9
Value of stock at close of the year „ 68,377 15 11

Difference, Rs. 1,445 5 10 against the year.

No. 26.

FOREST DEPARTMENT, CENTRAL PROVINCES.

Statement showing the amount realized on account of different classes of timber sold during 1873-74.

Division.		Number of logs &c. sold.	Cubical contents.			Amount realized on account of Timber &c. sold.			Average amount per 100 cubic feet.			Remarks.	
		Rs.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Pieces.	
Northern Division ...	Teak logs ...	371	6,570	0	0	6,278	10	4	95	8	10	Timber sold in previous years remaining unremoved at the commencement of year ...	140,894
Do. ...	Sal sleepers ...	301	754	0	0	1,422	0	0	188	9	6		
Do. ...	Bamboos ...	55,500	...	...	...	587	2	0	...	...	...	Timber sold during the year ...	140,894
Western Division ...	Teak logs ...	1,440	10,596	0	0	3,009	3	6	28	6	4		
Do. ...	Teak sleepers ...	42	55	0	0	15	12	0	27	4	4	Total ...	140,894
Do. ...	Hurdoo sleepers ...	1,051	1,365	0	0	2,102	0	0	153	15	10		
Do. ...	Sal sleepers ...	10	13	0	0	10	0	0	76	14	9	Timber remaining unremoved from depot by purchasers during the year. ...	
Do. ...	Anjan sleepers ...	1,293	1,681	0	0	2,586	0	0	153	13	4		
Do. ...	Bija Sal sleepers ...	1,000	1,300	0	0	2,000	0	0	153	13	6		
Do. ...	Dowra sleepers ...	739	960	0	0	1,478	0	0	153	15	4		
Southern Division ...	Teak logs ...	418	10,391	0	0	15,182	13	4	146	1	8	Balance removed from depot by purchasers during the year ...	140,894
Do. ...	Teak logs squared ...	41	968	0	0	2,270	7	4	234	8	0		
Do. ...	Teak scanttings ...	889	1,074	0	0	1,157	4	10	107	11	10		
Do. ...	Teak sleepers ...	2,322	7,254	0	0	11,040	15	0	152	3	0		
Do. ...	Teak planks ...	616	210	0	0	338	10	11	160	15	2		
Do. ...	Bamboos ...	3,000	...	...	...	28	12	0	...	...	...		
Eastern Division ...	Teak logs ...	266	6,243	0	0	4,500	1	6	72	1	3		
Central Division ...	Bija logs ...	8	160	0	0	126	13	0	78	12	0		
Do. ...	Saj logs ...	18	360	0	0	270	8	0	75	0	0		
Do. ...	Saj bullies and golas ...	173	...	...	...	442	8	0	...	...	...		
Do. ...	Saj khakers ...	258	...	...	...	80	2	0	...	...	...		
Do. ...	Teak khakers ...	424	...	...	...	254	4	0	...	...	...		
Do. ...	Dhooras ...	85	...	...	...	43	8	0	...	...	...		
Do. ...	Ascoots ...	62	...	...	...	14	9	0	...	...	...		
Do. ...	Goles ...	100	...	...	...	23	0	0	...	...	...		
Do. ...	Bamboos ...	69,750	...	...	...	3,056	3	5	...	...	...		

Sagar Division	...	Rohana logs	...	46	807	0	0	178	5	3	22	0	11
Do.	...	Kaim logs	...	11	180	0	0	29	8	3	16	1	9
Do.	...	Teak bullies	...	78	259	0	0	69	3	0	26	10	3
Do.	...	Teak choorias	...	9	17	0	0	2	1	6	11	12	2
Do.	...	Teak mulgas	...	113	...	...	...	12	2	0	...	...	...
Do.	...	Teak koornias	...	50	...	...	...	3	0	0	...	...	...
Do.	...	Teak koortan	...	300	...	...	...	9	0	0	...	...	...
Do.	...	Cheroli logs	...	1	64	0	0	4	0	0	6	4	0
Do.	...	Teak logs	...	108	1,124	0	0	1,047	7	3	93	2	4
Do.	...	Saj bullies	...	1	2	0	0	0	4	0	12	8	0
		Total	...	140,894	52,407	0	0	59,674	3	5			

Deduct amount due but not realized during the year.	17,228	3	5
Balance ...	42,446	0	0
Add amount realized on account of former years.	462	10	4
Add amount collected by District Officers ...	14,213	12	3
	57,122	6	7

As per revenue Head R.I. Form No. 21.

W Y H—3—19—600

No. 27.

FOREST DEPARTMENT, CENTRAL PROVINCES.

STATEMENT showing the amount expended on account of Timber brought on stock in the different Forest Divisions during 1873-74.

Name of Division.	Description of logs.	Number of logs	Cubical contents.			Timber expenses.			Cost of Establishment.			Total amount expended.			Average amount per 100 c.ft.			REMARKS.
			Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	
Northern Division	Teak logs	1	12,802	10	0	3,337	3	3	472	8	0	3,809	11	3	21	15	0	
Ditto	Sal sleepers	87																
Ditto	Sal timber	641																
Ditto	Bamboos	63,860	...	...	...	394	12	1	...	...	...	394	12	1	...	...	...	
Western Division	Anjan sleepers	1,312	5,791	0	0	6,204	13	11	1,450	0	0	7,654	13	11	132	2	9	
Ditto	Hurdoo sleepers	1,141																
Ditto	Bijasal sleepers	1,240																
Ditto	Dowra sleepers	763																
Southern Division	Teak logs	1,766	75,056	0	0	15,342	5	5	5,340	15	1	20,683	4	6	27	6	3	
Ditto	Teak logs squared	722																
Ditto	Teak sleepers	7,491																
Ditto	„ sleepers length	7																
Ditto	Teak scantlings	8,178																
Ditto	Teak planks	2,699																
Ditto	Bamboos	3,000																

Central Division	Bija logs	86	2,800	0	0	6,445	2	11	908	8	0	7,353	10	11	...	...	...						
Ditto	Saj logs	54																					
Ditto	„ bullies and golas	3,007																					
Ditto	Saj khakers	770																					
Ditto	Teak khakers	1,368																					
Ditto	Dhooras	994																					
Ditto	Ascoots	511																					
Ditto	Goals	100																					
Ditto	Bamboos	139,510																					
Sagar Division	Teak logs	108	2,451	0	0	45	14	10	230	9	10	276	8	8	11	4	2						
Ditto	Rohna logs	46																					
Ditto	Cheroli logs	1																					
Ditto	Kaim logs	11																					
Ditto	Teak bullies	78																					
Ditto	Teak mulgas	113																					
Ditto	Koonias	50																					
Ditto	Korgians	300																					
Ditto	Saj bullies	1																					
Ditto	Teak Choonias	9																					
	Total	240,038	98,900	10	0	31,770	4	5	8,402	8	11	40,172	13	4	...	...	...						

No. 27 A.

FOREST DEPARTMENT, CENTRAL PROVINCES.

Statement showing the amount expended on the transport of timber from Forest Depots to Stations during 1873-74.

Name of Division.	From.	To.	Distance.	No. of pieces.	Cubical contents.			Timber expenses.			Cost of Establishment.			Total amount expended.			Remarks.
					Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	
Northern Division.	Mandla ...	Gowarighat ...	60 miles.	*5,671	14,177	0	0	2,839	8	8	665	5	3	3,494	13	11	*By river.
Do.	Gowarighat ...	Allahabad ...	...	50	125	0	0										By rail.
Southern Division.	Tulana ...	Allapili ...	7 miles.	178	5,637	0	0										By land.
Do.	Allapili ...	Chanda ...	75 do.	836	650	0	0										do.
Do.	do. ...	Tickapili ...	14 do.	200	6,925	0	0										By river.
Do.	do. ...	Chichgundi ...	8 do.	5,043	34,856	0	0										do.
Do.	do. ...	Kirmiri ...	30 do.	2,108	6,585	0	0										By land.
Do.	do. ...	Ballarpur ...	76 do.	2,632	8,220	0	0										By land and river.
Do.	do. ...	Ahiri depot ...	5 do.	8,499	26,551	0	0										By river.
Do.	do. ...	Nagpur ...	171 do.	33	91	0	0										By land and river.
Do.	Tickapili ...	Ballarpur ...	71 do.	340	11,928	0	0										By river.
Do.	Chichgundi ...	do. ...	77 do.	2,256	17,269	0	0	30,148	10	11	10,577	8	9	40,726	3	8	do.
Do.	do. ...	Kirmiri ...	about 30 do.	384	389	0	0										By land.
Do.	Wangapilli ...	do. ...	27 do.	283	884	0	0										By river.
Do.	Kirmiri ...	Ballarpur ...	46 do.	7,452	22,637	0	0										do.
Do.	Ballarpur ...	Tulanaghat ...	46 do.	11,342	37,683	0	0										do.
Do.	do. ...	Nagpur ...	115 do.	249	6,045	0	0										By land.
Do.	do. ...	Warora ...	36 do.	31	756	0	0										do.
Do.	Tulana ...	Nagpur ...	78 do.	32	1,007	0	0										do.
Do.	Ahiri depot ...	Kirmiri ...	27 do.	4,094	12,789	0	0										By river.
Eastern Division.	Burhampuri ...	Nagpur ...	70 do.	46	1,168	0	0	237	10	0	...	...	...	237	10	0	By land.

FORM No. 2.

Annual Account of Forest Revenue for 1873-74.

RECEIPTS.	Amount. Rs.	A.	P.	DISBURSEMENTS.	Amount. Rs	A.	P.
Amount of revenue realized in 1873-74 ...	5,68,367	0	8	Amount disbursed in 1873-74 ...	2,83,557	8	8
DEDUCT :— ...				DEDUCT :— ...			
Amount realized on account of previous periods ...	803	9	2	Amount disbursed on account of transactions of former periods ...	7,226	2	8
Balance ...	5,67,563	7	6	Balance	2,76,331	6	0
ADD :— ...				ADD :— ...			
Outstanding on account of the year, Rs. 17,634-5-7 ...							
Minus for bad debts „ 0-0-0 ...	17,634	5	7	Amount due for transactions during the year under review but not yet disbursed ...	2,363	1	1
Value of the year's transactions ...	5,85,197	13	1	Real cost of the year's transactions ...	2,78,694	7	1

	Rs.	A.	P.
Value of the year's transactions ...	5,85,197	13	1
Cost of the year's transactions ...	2,78,694	7	1
Balance ...	3,06,503	6	0
Add difference between value of stock at close and beginning of year as per Form No. 25 and 25 A ...	53,773	6	5
Net result of the year ...	3,60,276	12	5

B G Z 4 24 600

Detail of the amounts shown to Debit and Credit of former years in the Form No. 28 for 1873-74.

Period.	Receipts.					Expenditure.	Remarks.
	R. I. Sale of timber brought to depots.	R. II. Sale of timber removed by purchasers.	R. V. Grazing dues.	R. VI. Sale of fruits.	Total.	A. I. Timber expenses.	
For the year 1869-70 ...	...	...	...	...	...	442 2 8	
For the year 1871-72 ...	...	...	...	...	...	3,000 0 0	
For the year 1872-73 ...	462 10 4	114 10 10	36 6 0	189 14 0	803 9 2	3,784 0 0	
Total ...	462 10 4	114 10 10	36 6 0	189 14 0	803 9 2	7,226 2 8	

FORM No. C.

Statement showing the adjustment of discrepancies between the Forest and Civil Accounts under the head Remittances from Treasuries.

		Rs.	A.	P.		Rs.	A.	P.
Unadjusted difference at close of the year 1872-73 ...	Forest accounts, more ...	2,582	0	9	Forest accounts, less ...	...	...	...
Difference in 1873-74 ...	Forest accounts, less ...	7,953	8	5	Forest accounts, more ...	4,699	0	0
Adjusted in accounts for April and May 1874	Forest accounts, more ...	...	...	...	Forest accounts, less ...	5,831	15	8
		10,535	9	2		10,530	15	8
		10,530	15	8				
Discrepancy remaining ...	Forest accounts, more	4	9	6				

Statement showing the adjustment of discrepancies between the Forest and Civil Accounts under the head Remittances to Treasuries.

		Rs.	A.	P.		Rs.	A.	P.
Unadjusted difference at close of the year 1872-73	Forest accounts, more ...	...	...	...	Forest accounts, less ...	387	7	0
Difference in 1873-74 ...	Forest accounts, less ...	549	10	2	Forest accounts, more ...	10,770	2	6
Adjusted in accounts for April and May 1874	Forest accounts, more ...	953	1	9	Forest accounts, less ...	...	...	...
		1,502	11	11		11,157	9	6
						1,502	11	11
Discrepancy remaining ...					Forest accounts, less ...	9,654	13	7

Appendix.

(Referred to in para. 103 of Forest Report.)

Letter No. B. 771.

Accountant General's Office:
Nagpur, 18th June 1874.

To

The Conservator of Forests,
Nagpur.

Sir,

I have the honor to communicate the result of the comparison of your abstract account with the accounts of Government.

2. As I already informed you, it is necessary that you should count the remittances from and to Government treasuries by the months in which they are charged or credited in the treasuries and not by the months in which they reach or become known to your Department. This will necessitate certain transfers between the heads of remittance and of balance in your Statement of accounts; and the transfers, five in number, are shown in Statement I. hereto appended. The result of them upon the figures of the four heads affected is shown in Statement II. hereto appended.

3. Corrected for these, your abstract account would be as follows :—

Dr.	Rs. A. P.		Rs. A. P. *Cr.*
Balance 1st April 1873	20,505-6-11	Remittance to Treasuries	5,44,215-6- 2
Remittance from Treasuries	2,64,368-9- 5	Other heads	3,71,860-5-10
Other heads	6,38,532-4- 1	Balance, March 31st 1874	7,330-8- 5
Total...	9,23,406-4- 5	Total	9,23,406-4-5

4. The balance above stated does not agree with my books because the head under which it occurs "Forest Remittances" has not been examined for a long time, and of course brings forward the discrepancies of past years. This, however, is not a question affecting the present year's accounts.

5. The figures above shown under other heads on both sides agree with my accounts.

6. The figures under remittances from treasuries by my accounts are Rs. 2,64,363-15-11, being short of your figures as above corrected by Rs. 4-9-6, the amount of which you say you are unable at present to give complete explanation. The explanation is, that this amount was drawn from the treasury at Bilaspur in May 1873, and refunded in the same month. It has been omitted *per contra* in this office.

7. The figures under remittances to treasuries in my accounts show Rs. 5,54,823-5-6, being in excess of yours by Rs. 10,608-15-4. This discrepancy is composed of the following items, which are included in my accounts but not in yours and which are pending adjustment :—

Rs.	A.	P.
13	0	0
9,587	5	0
57	8	8
316	0	11
578	0	2
1	8	0
60	6	7
Total... 10,613	13	4

Less Rs. 5-14-0, which is shown in your accounts but not shown in mine.

8. You have informed me that all these items are under reference by you.

I have the honor to be,
Sir,
Your most obedient Servant,
J. WESTLAND,
Accountant General,
Central Provinces.

L S—6—37—600.

STATEMENT I.

TRANSFERS.

A.—Deduct from remittances from treasuries.

Add to balance on 1st April 1873.

The following remittances made in 1872-73 but entered in Forest accounts as made in 1873-74 :—

	Rs.	A.	P.
	1,213	6	8
	1,392	8	7
	41	0	0
Total...	2,646	15	3

B.—Deduct from balance on April 1st 1873.

And also from remittances to treasuries.

The following remittances to treasuries which were made in 1872-73 but were shown in the Forest accounts as made in 1873-74 :—

	Rs.	A.	P.
	326	0	9
	151	7	0
	71	0	0
	9	0	0
	1	2	5
Total...	558	10	2

C.—Add to remittances from treasuries.

Deduct from balance of April 1st 1873.

The following remittances actually made in 1873-74 but taken in Forest accounts as made in 1872-73 :—

	Rs.	A.	P.
	5,129	0	0
	100	0	0
Total...	5,229	0	0

D.—Deduct from remittances from treasuries, and from balance on March 31st 1874.

The following amounts entered in Forest accounts, but remittances not actually made in March 1874 :—

	Rs.	A.	P.
	430	0	0
	241	15	8
	5,160	0	0
Total...	5,831	15	8

E.—Add to balance of April 1st 1873 and to remittances to treasuries.

The following remittances to treasuries wrongly shown in Forest accounts as made in 1872-73, adjusted by a write-back under the same head in 1873-74 :—

	Rs.	A.	P.
	59	15	2
	4	0	0
	107	4	2
Total...	171	3	2

STATEMENT II.

Result of Transfer.

Balance on April 1st 1873.

				Rs.	As.	P.
As stated	...	...		23,474	14	8
Add A.	...	...		2,646	15	3
„ E.	...	...		171	3	2
				26,293	1	1
Deduct B.	... 558	10	2			
„ C.	... 5,229	0	0	5,787	10	2
				20,505	6	11

Remittance from Treasuries.

				Rs.	As.	P.
As stated	...			2,67,618	8	4
Add C.	...			5,229	0	0
				2,72,847	8	4
Deduct A.	... 2,646	15	3			
„ D.	... 5,831	15	8	8,478	14	11
				2,64,368	9	5

Remittance to Treasuries.

				Rs.	As.	P.
As stated	...			5,44,602	13	2
Add E.	..			171	3	2
				5,44,774	0	4
Subtract B.	...			558	10	2
				5,44,215	6	2

Balance of March 31st 1874.

				Rs.	As.	P.
As stated	...			13,162	8	1
Deduct D.	...			5,831	15	8
				7,330	8	5

No. 2658,
111

FROM

LINDSAY NEILL, ESQUIRE,

OFFG. ASST. SECRETARY TO THE CHIEF COMMISSIONER,

Central Provinces.

To

THE CONSERVATOR OF FORESTS,

Central Provinces.

Dated Nagpur, the 28th July 1874.

SIR,

I am directed by the Chief Commissioner to acknowledge receipt of your report on Forest administration for the year 1873-74, and am to make the following remarks thereon.

2. Form 1 shows that the area of Reserved forests has increased by 33 square miles and 292 acres, 32 miles; and 396 acres of which represent the Bimaram and Mirkulloo tracts purchased by Government in the Chanda district; and the balance is, you write, owing to certain corrections being made on obtaining more accurate information regarding tracts not yet surveyed. The Chief Commissioner apprehends that there is some error in the figures, for on comparing those in Form 1 with those in the similar table for 1872-73 he finds that this year's figures show an increase of 3,237 acres, equivalent to 5 square miles and 37 acres. The figures are these :—

	Name of Forest.	Acreag in 1872-73.	Acreage in 1873-74.	Increase in acres.
		S. M. Acres.	S. M. Acres.	
1	Barela ...	10·7	10·46	39
2	Singrampur ...	10·24	10·156	132
3	Punassa ...	143·31	143·200	169
4	Satpura ...	456·14	456·91	77
5	Hathibari ...	3·31	3·203	172
6	Kantranala ...	5·54	5·348	294
7	Garhakota ...	4·52	4·339	287
8	Tigora ...	·71	·459	388
9	Ranjir ...	14·81	14·521	440
10	Rampura ...	11·54	11·346	292
11	Hatkoo ...	28·96	28·638	542
12	Pandratola ...	7·75	7·480	405
	Total ...	...	...	3,237 acres

K Q Z 28 254 600

As the areas of the six Sal bearing tracts in Mandla and Balaghat have not as yet been surveyed, they are not included in the statement; their area is believed to be about 220 square miles. The progress made in the demarcation of these tracts is satisfactory.

3. Statement B. shows the produce removed on purchase from the reserved forests. There is a somewhat similar statement in last year's report in paragraph 6, but it hardly affords means of contrasting whether the reserved forests are being more drawn upon than formerly. As yet our unreserved forests afford a sufficiency of fuel, grass, small building wood, &c., but in the Western Division the State forests have supplied bamboos and small building wood in considerable quantity, and in the Southern Division the Moharli Forest also furnished a large supply of bamboos.

4. In paragraph 7 you touch on the subject of the rights of Malguzars and other landowners to their private forests, and state that you are not fully informed of the exact conditions under which these forest lands were conferred. You are no doubt aware that Rule XV. of the Central Provinces Forest Rules does give the District Officer some right of interference, and rules on the subject were framed and instructions issued in the Chief Commissioner's Book Circular XIV. of 1868. These are as follows :—

"It appears that a clause, such as is indicated in this rule,* has been entered in every village "Administration paper," but that the manner in, and extent to which action is taken thereon, vary in different districts. The Chief Commissioner, after consulting the Conservator of Forests, and learning the views of the Commissioners of Division, is pleased to direct that the appended rules shall be the guide in regard to interference with ordinary private forests.

"It will be seen that the only real restriction embodied in these rules, is the provision that landholders may not cut growing teak, sal, or sheshum trees, of a particular girth, without the permission of the Tahsildar. Ordinarily, a Tahsildar will grant permission to fell, when a landholder asks to be allowed a few trees only. But if a landholder asks permission to fell, to sell to a contractor a large number of growing trees; and if it be known to the Tahsildar that the young forest is a promising one, he will report the matter for the Deputy Commissioner's orders. And the Deputy Commissioner will exercise his discretion as to the extent of assistance or interference which he should exercise through the Tahsildar, or the District Forest Darogha. A Deputy Commissioner will usually be able to arrange for allowing the landholder to cut down such trees as he may require without wasting timber or destroying the forest.

"The only estates which may have to be treated specially, and which will not come under these rules, are the Zamidarees * * * * and others to which the "excess waste rules" have not been applied; and for which some special regulation in regard to forest matters will probably be made.

"No specific penalty is, it will be observed, attached to a breach of these rules. But the Chief Commissioner feels confident that the vigilant

* "XV.—Besides exercising the management, as above, of 'Unreserved Forests,' District Officers will use every endeavour to give full effect to that clause in the Administration papers of proprietary villages, in which the proprietors have agreed to adopt the established principles of Forest conservancy, as far as may be feasible, in regard to the timber trees on their own lands, which are their exclusive property.

Private Forest conservancy.

care of the District Officers and Tahsildars, will suffice to ensure a general adherence to these rules.

"Vernacular copies of these rules should be lithographed and distributed to each landholder to be kept with his copy of the Settlement Misl.

Rules regarding the felling of timber by landholders, other than Zamindars on their own estates.

"I.—Proprietors of unreserved waste lands are at liberty to cut, without any restriction, all forest produce and timber on their estates, except teak, sal, and sheshum.

"II.—Growing trees of the above three sorts, namely, teak, sal, and sheshum, over half a cubit and under three cubits in girth, are not to be felled without the permission of the Tahsildar of the sub-division; unless they show signs of decay.

"III.—In felling saplings of teak, sal, and sheshum, one of the best and most healthy looking (if possible a seedling) is to be left on each hundred square yards of ground, that it may become a seed bearing tree in future years.

"IV.—Subject to the aforesaid restrictions, a breach of which will be regarded as an infringement of the Settlement agreement, village landholders will have entire right over their timber, and will be able to use it as they like, without the permission of Government Officers. These rules do not apply to Zamindars, regarding whose forests special regulations and conditions will be made."

From your remarks the Chief Commissioner infers that these rules are not everywhere applied, and although a breach of them is not followed by any specific penalty yet he is inclined to think that if you brought to the notice of a Deputy Commissioner any cases "where Malguzars are clearing out their village forests as fast as they can, and converting the stock into money, while in many other they have closed their forests entirely in the hope, it is believed, of securing a monopoly in the future," his interference and advice would be productive of good. Similarly the Chief Commissioner thinks that there is but little doubt that all villagers have a prescriptive right to fuel, grass, and minor forest produce from Malguzari forests, and that the District Officer's intervention would restrain Malguzars from entirely excluding them therefrom. If cases which demand interference have arisen or are likely to arise it would seem that there is necessity for investing the District Officers with increased powers, and this might most conveniently be done by a revision of and addition to the Forest Rules or of the Forest Act, the latter of which, as your Section III shows, seems to stand in need thereof.

Protection.

5. In last year's report it was stated that the Forest Rules framed under Act VII. of 1865 had been generally regarded, but that there did exist difficulties in dealing with fires in reserved forests. This year, however, you mention that under the Act efficient protection of the Government forests is impossible. On this subject some correspondence has passed, and the Chief Commissioner is inclined to believe that an amended Forest Act is really required. The matter has indeed been under the consideration of the Supreme Government for a long time, and Mr. Morris again brought to notice the necessity of a new Act when soliciting the

sanction of Government to amended Forest Rule XXII. In paragraph 14 you give an illustration of the imperfect working of the rules. On this particular illustration it is perhaps only necessary for the Chief Commissioner to say that if you have stated all the facts correctly, the procedure of the Magistrate was not in all respects quite proper. In the first place your department should not have been asked to sell the confiscated wood, and secondly there is nothing in the Act which would have prevented the Magistrate from making over the wood to your department, though perhaps according to the strict letter of the law the orders of the Local Administration might under Act XIV. be necessary. Probably your department made no application for the wood.

Prosecution for infringement of the Act and Rules.

6. There were in all 354 cases of prosecutions, involving 691 persons; and of these latter, 583 were convicted. Prosecutions were more frequent then in 1872-73, but the number of persons charged and of persons convicted was less. You seem inclined to think that prosecutions are still in some districts too few; and certainly the *total* number of prosecutions is small, and, as has been before remarked, speaks well for the forbearance of your department. Government, however, has expressed a wish that prosecutions for trivial offences should not be needlessly and vexatiously undertaken, and in this year's Judicial (Criminal) administration Report, the Commissioner of the Narbada Division has expressed an opinion that prosecutions, in one district at least *had* been needlessly undertaken.

Paragraph 13.

7. The Chief Commissioner entirely concurs with you that it is not unreasonable to expect that owners of private forests shal make such arrangements when they fire their own forest as to prevent the spread of fire to Government lands; at the same time i would also be prudent that the kindling of such fires should be made known to your subordinates so that the Government preventive establishments migh be on the alert. The Chief Commissioner will ask all Deputy Commissioner to co-operate with you in impressing this obligation on all owners, for it is n hardship on them to insist that they shall take such precautions as to secur their neighbours and the community at large against damage which the heedlessness of their agents may cause.

Fires.

8. In the Satpura Reserve the entire area not specially protected was burn and even in the specially protected blocks two fires o curred, though luckily these were extinguished befo they had extended over more than 480 acres. In the Ahiri Forests fire brok out no less than three times, but here also the preventive establishment had th rare good fortune of getting it under on each occasion, so that you are able t report that the total area burnt is estimated at 150 acres.

9. In Punasa and Mohurli there was complete failure, for in Punasa, th block, the protection of which was attempted in 1872-73, was entirely burnt over and in Mohurli two fires occurred, one early in the season (caused it is said by th carelessness of the servants or camp followers of the Superintendent of Polic Chanda, and the damage arising from which is not stated); and the other later i the season, which swept over the whole area. Thus in all, eight fires took pla in Forest tracts under protection.

The total area under protection in 1873-74 was 165,450 acres; and the are burnt was 31,990, or nearly $\frac{1}{5}$th of the total under protection; while the co of the protective establishment for 1873-74 was Rs. 3,926, and the total e penditure on protection for the respective dates on which it was introduce into the various reserves was Rs. 35,687.

On the whole these results are not unsatisfactory, though it must remain a matter for regret that the two fires in the Satpura protected block, which you denounce as undoubtedly the work of an incendiary, were not traced to any individual, and that the protection of the Mohurli Reserve entirely failed, owing, it must be inferred, to apathy and indolence on the part of the local preventive staff.

Paragraph 27.

10. The necessity of the exclusion of fires for the growth and regeneration of the forests is so patent as to call for no remark. The Chief Commissioner can, however, not quite follow your meaning in your comments on the quotation from Mr. Thompson's report. The quotation is given to show the beneficial effects on the forests of protection from fire, and Mr. Thompson writes that the portion of the forest which was effectually protected was refoliaged quite a month sooner than the adjoining one (which it is presumed was not effectually protected). Your remarks in the last clause of the paragraph express a doubt, the Chief Commissioner presumes, as to the accuracy of Mr. Thompson's observations, for you are under the impression that fire tends to excite vital energy in trees of a certain growth and stimulates the production of leaf: in other words, given two areas with trees of a certain growth, protect the one and allow fire into the other, then according to you, the trees in the area burnt over should develope leaves sooner.

Paragraphs 29 and 30.

11. The experiment made in the Satpura Reserve of admitting cattle in even such a small proportion as one to every 15 acres seem to prove pretty conclusively that their total exclusion under certain circumstances is desirable; at the same time, cattle under other circumstances seem to do some good by treading the seed into the ground.

Artificial re-stocking in the Jagmandal Forest.

12. The results of the three experiments in the Jagmandal Forest for the purpose of stocking blanks by artificial sowing are varied, and they may be due to the causes to which you ascribe them. You, however, seem to draw no practical lesson from these results; at all events you state none. *Primâ facie* it would seem that the third plan, *viz.* that of sowing the seed broadcast, without any preparation of the land, was the most economical. Seed is plentiful, and the proportion of seedlings in April 1874 to seedlings in August 1873, was much more favourable with this plan than with the other two.

Experimental planting operations.

13. The small plantation at Telinkheri appears to be answering the purpose for which it was made over to your department. It affords a convenient field for small experiments with indigenous or exotic trees and plants, and at the same time it can be so managed as to yield a profit.

During the year experiments were made in planting the Adansonia Digitata, the West Indian Mahogany, the Ficus Elastica, the Eucalyptus Globulus, and a good species of Rattan Cane. The results are described in paragraphs 44 to 47, and as far as they go, are satisfactory.

Cutting back the tap roots of teak has also been tried, but as yet with little promise of good results. The experiments should be continued, as the subject is one to which the Government of India has enjoined special attention.

Works for opening out the forests.

14. In the Southern Division some success was attained in transporting timber by water to Warora, and you consider it probable that it will be found more profitable to change the place of delivery and sale, and convey the timber to Hyderabad. In the Western Division the work of testing the smaller rivers, with reference to

their capabilities of transport, was not satisfactory, partly owing to a deficient rain-fall, and partly to the fact that no experienced officer could be spared for the work.

Yield, and working of the forests.

15. You assert with some confidence that soon the demand for timber will be so great as to render it advantageous for your department to take all felling into its own hands. The Chief Commissioner concurs with you in thinking such a step very desirable, and also that the time for taking it will soon, if it has not already, come.

The principal operations of the present year were in the Southern Division,—the preparation of 2,488 teak logs, 7,491 sleepers, 8,178 scantlings, and 2,699 planks; in the Northern Division the felling, preparation and bringing to depôt of 644 squared logs with a view to their sale in the Jabalpur or Allahabad market; and in the Western Division, the cutting and preparation of 4,456 sleepers for the Holkar State Railway, of which 3,077 were actually delivered.

The Chief Commissioner will be glad to learn the result of the sale of the timber of the Mandla and Balaghat Sal forests at Jabalpur. The cost of the work actually done up to the close of the year was stated by the Deputy Conservator of the Northern Division to be Rs. 8,259, and by you to be Rs. 3,809. It is of course quite proper that the cost of all stock engaged on the work should not be charged against the out-turn of one year, as was done by the Deputy Conservator, but the Chief Commissioner requests that when you do report finally on this experimnt you will give full details of *all* expenditure, so that he may have an opportunity of seeing the proportion you debit to this first year's trial.

The Chief Commissioner is not in possession of sufficient information to be able to criticise the statements in your 61st paragraph or to analyse the table which you give. It seems to show that the profits of dealers in timber are enormous and quite out of proportion to any risks which they may run. It would be gratifying if your department could by departmental agency compete with them, and either secure to Government a portion of the large profits which timber dealing appears to furnish or bring timber to the people at more reasonable rates than is now done.

Unreserved Forests.

16. The District Unreserved forests cover an area of 17,604 square miles. These at least are the figures given in your Form No. 2, but they seem open to the same allegation of incorrectness which the Chief Commissioner made in paragraph 2 of this review with reference to the State Reserved forests. For instance Mandla, which in 1872-73 was shown to have 4,708 square miles of Unreserved forests, is this year shown to possess only 2,293. The Chief Commissioner cannot conceive where the missing miles have gone. As has been frequently stated on previous occasions, the systems of management vary with the requirements and peculiarities of the several districts in which they are in force. Uniformity in management is impossible, and this year has again seen systems modified and rendered more suitable to the wants of the people. Throughout, the principle has been recognized that the system should as far as is possible be adapted to the people, and not that the people should be made to submit to vexatious and unnecessary hardships for the sake of the theoretical excellence of any one fixed plan. Some forests which in previous years have been too much denuded, have been closed so as to allow them to recover, and everywhere a check has been placed on excessive and injudicious waste. One great want in the management of these Unreserved forests, is a good and practical working plan, which

while laying down correct principles of working, does not impose on the present generation too many sacrifices for the sake of its successors. Such a plan would prove conclusively to District Officers, and through them, to the people, that the action of Government in checking waste and husbanding the resources of the forests, whether these aims be attained by the closing of hitherto open forests, or the levying of higher rates on produce removed, is really taken in the interests of the people themselves, and that no grounds exist for the idea that the action of Government springs from a desire for a higher revenue and not from purer and more unselfish motives. At the present time indeed a working plan is more necessary for the Unreserved than for the Reserved forests, for these latter are having rest, while the former are still nearly everywhere being resorted to, and the Chief Commissioner will be glad if Forest Officers can be deputed to draw up plans for the District which stand in most need thereof. Something in this way has been done, but much more still remains. With these remarks the Chief Commissioner will proceed to make some short comments on those District forests which you more particularly notice.

NAGPUR.—Forest management in Nagpur has received perhaps less attention than in any other district of the Division; the subject is at present being considered by the Deputy Commissioner and Commissioner.

BHANDARA.—The future management of the Bhandara forests was very fully considered by the Commissioner of the Division and also by the Chief Commissioner during their cold weather tour, and after the close of the year the Chief Commissioner was able to give his assent to arrangements proposed by the Commissioner. It was found impracticable to carry out the suggestions in your report of September 1872 for the introduction of a rotation system, though your suggestion for taking up a block as a reserve was adopted. Your proposal to close $\frac{4}{5}$ths of the forest and $\frac{1}{3}$rd of the grazing lands would have seriously affected the prosperity of the district and would have stimulated the emigration which commenced since 1867. It was found that wholly direct management was owing to the large area and scattered nature of the forest lands impossible, and the choice then lay between commutation and sale of usufruct leases, and was given in favour of the former, for the reason that that system was in force and was popular. In order to diminish the risks attending the system the following conditions were imposed:—

(1.) Under the powers which Government has to prescribe the manner in which Zamindars shall raise their Forest revenue, all Zamindari forests contiguous to forests belonging to Government were incorporated in the system. By this an immense addition was made to the area for which the people commuted, and the drain on the Government forests was spread over a much larger surface; at the same time justice to the Zamindars demanded that at the close of the year they should receive their quota of the total collections made for villages drawing their supplies from the forest region in which their forests might be situated.

(2.) In order to provide against too great a drain on the Bhandara forests by Nagpur wood dealers, a rotation system, but on a *small scale* was introduced in the tracts most accessible to Nagpur. To close largely would be unjust, as it is not fair to the people to make them commute and then close a large portion of the area they pay for.

(3.) With a view to ascertaining the dimensions of the export* trade it was directed that the collection of fees on produce should be held direct for one year. If necessary, a check can be placed on exportation or exporters be compelled to resort to the more distant forests.

* For it is believed that only by export is there any fear of the Bhandara forests being denuded.

(4.) An attempt was ordered to be made further to relieve the Bhandara forests, and at the same time to suit the convenience of villagers in the northern part of the district, by allowing these latter to commute for forest produce in the Balaghat district.

The Chief Commissioner believes that these arrangements will meet the exigencies of the case and secure Government forests from over-cutting.

CHANDA SYSTEM.—The Chanda system is rather a strange one, and affords *primâ facie* some opening for oppression, but the Commissioner of Nagpur, after very carefully going into it, owing to a fear expressed by the Chief Commissioner that Malguzars were exacting, lately reported as follows:—

"I am inclined to think that the Chanda system has merits which outweigh the risk of a little exaction by Malguzars. The cardinal defect in all the systems of commutation that I am acquainted with, is that they are wasteful, *i. e.*

"(i.) they tempt commuters to use much more than they would otherwise have used.

"(ii.) they enforce no distinction between valuable and (comparatively) worthless produce, and commuters are then tempted to cut what is valuable when what is worthless would serve as well. Residents in commuting villages cut valuable trees for firewood if it suits them to do so. The commutation covers both and they naturally cut what is nearest.

"Now the system which Major Lucie Smith devised for Chanda avoids this defect in an ingenious manner. He practically allows commutation for unreserved timber, charcoal, bamboos, grazing, firewood, grass, &c. *but by raising all the commutation revenue* from the three first named *articles*, he appears to me to have solved the problem how to combine the easy working of a commutation with the utmost possible protection to the forests."

WARDHA.—In June of the present year a very full report was submitted on the present and future prospects of the 200 square miles of forest land in the Wardha district, and detailed orders have recently issued on the subject.

OTHER DISTRICTS.—In Sagar some 18 tracts have been closed against felling and are also being protected from fire and cattle; and in Damoh the Deputy Commissioner is considering the expediency of closing certain areas against indiscriminate felling. In Seoni and Mandla also certain tracts have been closed. The attention of the Deputy Commissioner of Jabalpur will be drawn to paragraph 15 of the Chief Commissioner's review for the year 1872-73.

In Betul the revenue materially increased, owing to better management and system; but the revenue is still susceptible of expansion, and more protection against illegal removal of produce to Berar is requisite. In Chhindwara forest management is still not good, and the Commissioner of the Narbada Division

is considering the question. In Hoshangabad the introduction of the Nimar license system has financially proved very successful, the income for the year under review being Rs. 38,858, against Rs. 15,204 in 1871-72; and the present system is in every respect better than the farming system which it displaced. The difficulties against which the Officiating Deputy Commissioner of Hoshangabad had to contend in working the system seem very formidable as marshalled forth in your 80th paragraph but with longer working, greater experience and general improvement will be gained.

In Nimar the revenue fell off slightly, and it is believed by the Commissioner that the Nimar revenue has reached its highest point. The statistics which Colonel Playfair has set about collecting will prove interesting and useful.

CHHATTISGARH.—In Raipur and Bilaspur forest management is not as good as it should be. The Nimar system was introduced into both in the middle of the year, and more experience is required as to its suitability to these districts.

The Forest income in the Upper Godavari District was exceptionally large, wing to some large recoveries of outstandings, and some good work done during he year.

17. The financial results are very satisfactory, and show marked improvement on those of last year, good as those were, thus :—

Financial Results.

	Total Income. Rs.
1873-74 ...	5,68,367
1872-73 ...	4,81,673
	Total Expenditure.
1873-74 ...	2,83,557
1872-73 ...	2,47,837

which gives a surplus in 1873-74 of Rs. 2,84,809, against one in 1872-73 of Rs. 2,33,836. Separating the revenue the following distribution has to be made :—

	Rs.
From Reserved Forests	1,04,028
From Unreserved ,, ...	4,64,339

18. The Chief Commissioner thinks it a matter for regret that there should be a dispute between yourself and the Chief Engineer regarding wood supplied to the Public Works Department. It was hardly necessary to notice the matter prominently in paragraph 96. A note in the Statement was all that was necessary to explain the nature of the outstanding. Into the matter of your difference of opinion the Chief Commissioner thinks it unnecessary to enter here, and orders have issued in the Public Works Department for the adjustment of the account.

Outstandings,—Form 23.

19. With reference to your paragraph 101 the Chief Commissioner will only observe that some correspondence originating from a conversation he had with you has lately passed regarding regulating to a certain extent the rates charged for timber, and that he has requested you to submit your views at length.

20. GENERAL REMARKS.—The Chief Commissioner will ask the attention of District Officers to your paragraphs 105 to 110, regarding defects of the system of granting annual licenses for the removal of forest produce. The advantage which your suggestion if adopted would secure, of our obtaining a more accurate knowledge of the requirements of the people, is a very great one, but the Chief Commissioner has some doubts whether all your suggestions are feasible and will work smoothly.

21. The Accountant General will be asked to aid you in clearing up present discrepancies between the Treasury and Forest Accounts and avoiding them in future. If your proposal of a plus and minus adjustment is the simpler plan, and there are no departmental objections to the same on the part of the Accountant General, it might easily be adopted.

22. The appointment of Chandar Kumar Chhatarji to a forest apprenticeship seems to have been very suitable and he gives promise of doing well. If suitable selection can be made the Chief Commissioner will be glad to receive proposals from you for promoting more young men to the post.

23. To all the Officers mentioned in your 113 paragraph I am to convey Mr. Morris' thanks for the efficient manner in which they have discharged the duties entrusted to them; whilst to yourself the Chief Commissioner's acknowledgments are due for the careful manner in which you have supervised the important operations of your department.

I have the honor to be,
Sir,
Your most obedient Servant,

LINDSAY NEILL.
Offg. Asst. Secretary.

Y i 29 266 600

No. 1116, dated the 5th October 1874.

From—A. O. HUME, Esq., C.B., *Secretary to the Government of India,*
To—*The Chief Commissioner, Central Provinces.*

I AM directed to acknowledge the receipt of your letter No. 2684-132, dated the 29th July last, and to communicate the following observations by His Excellency the Governor General in Council.

2. Including the Ahiri forest, the acquisition of which, it is understood, is about to be accomplished, the aggregate area of the demarcated reserves amounted at the close of the year to 1,902 square miles and 383 acres. It would appear that in the area statement of 1872-73, the Conservator gave the area in square miles and decimals, while in this year's statement he entered it in square miles and acres; hence the discrepancy noticed in paragraph 2 of your review, 10·07 square miles (Barela) being equal to 10 square miles and 46 acres, 10·24 square miles (Singrampur) equal to 10 square miles and 156 acres, and so on. In the orders of the Government of India on last year's report, the Conservator's statement was misunderstood, and the area was erroneously stated at 1,869 squares miles and 90 acres.

3. It is said that in the Mandla and Balaghât district, six sál-bearing tracts, aggregating upwards of 220 square miles, have been demarcated. Referring to previous correspondence on the subject, I am directed to observe that, considering the large extent of sál-producing forest on the Maikal range at the disposal of Government, the area of the blocks demarcated appears small; the Conservator should personally examine them, and consider whether these blocks ought not to be increased. It is hoped that in selecting the boundaries the natural features of the country have as much as possible been followed, and that large compact areas of land have been included.

4. With this addition the reserves will amount to 2,120 square miles, or about 2·5 per cent. of the entire province—a very small area, if it is considered that the experience hitherto gained in the management of the unreserved forests shews clearly that in many districts these cannot be depended upon for a permanent supply of forest produce, and that eventually the reserves and private forests will be the only sources of supply. With reference to one class of these private forests, *viz.*, those included within malguzari areas, the attention of His Excellency the Governor General in Council has been drawn to the last clause of paragraph 4 of your review, and I am directed to enquire whether the malguzar has the right to levy dues from the members of the village community for the use of the forest produce from their lands. You say that the villagers have a prescriptive right to fuel, grass, and minor forest produce from malguzari forests; but, on the other hand, it seems to be admitted that dues *are* levied from them, and that in some cases malguzars interfere with those prescriptive rights by excluding the villagers from their forests, or by clearing them out and converting the growing stock into money for their own use. The Governor General in Council would be glad to receive a fuller exposition of this question; at present it is not clearly understood whether the rights in and over these forests are vested exclusively in malguzars, or villagers, or conjointly in both, nor in either case what means are open to the right-holders to secure their rights against infringements by the other party.

5. It is important that the yield of each reserve and each compartment of a reserve should be recorded in full detail in books, which will serve to maintain a record of the entire management of the reserve from the time of its formation. The first pages of this book should be devoted to a statement of area and boundaries and a brief descriptive account of the reserve, after which should follow an annual statement of yield and of work done for its improvement. An abstract of these annual entries has its proper place in the annual progress report, and the statements submitted this year by the Conservator under forms A and B should be maintained for the present.

6. The aggregate forest area successfully protected from fire was 133,460 acres at the close of last year against 143,000 acres at the end of 1872-73. The difference is mainly due to the failure last year in that portion of the Punassa

reserve which had been successfully protected in 1872-73. It is satisfactory that the necessity of excluding fires is now generally recognized.

7. The care of the reserves must more and more become the main duty of the Forest Department; whatever can be done for their improvement will be a permanent advantage to the country. The Governor General in Council notices that grazing is permitted in 11 out of 24 reserves, and trusts that due precautions have been taken to prevent prescriptive rights to pasture or to any other kind of forest produce growing up in the reserves. Moreover it is acknowledged that where cattle are admitted the exclusion of fires is impracticable, and for that reason also it is desirable to arrange, if possible, for the gradual exclusion of cattle from all reserves until their improvement has progressed so far that grazing may, without risk, be permitted in certain blocks. The reserves, it is noticed, are mainly used as pasture grounds in the western portions of the Hoshangabad and Betul districts, where the reserves are extensive and the area of the unreserved forests comparatively small; but it is hoped that here also it may be found possible to localize pasture in certain blocks, so that the great mass of the reserves may gradually be improved.

8. Regarding the management of the unreserved forests, observations were made in the review of the report for 1872-73. From the facts reported in the documents now received, it clearly appears that the difficulties in the way of the maintenance or improvement of the productiveness of these woodlands are very great. Several schemes for a periodical closing of blocks and the establishment of a regular rotation have already been reported as either too costly or likely to be felt by the people as inconvenient and irksome. Meanwhile it is apparent from all accounts that the character and productiveness of these forests has in many districts seriously changed and deteriorated within the last ten years, and that large tracts of these unreserved forests are becoming rapidly denuded.

9. His Excellency the Governor General in Council gathers from the information submitted in the present report that the attempt to ensure the maintenance and improvement of the growing stock on these extensive areas, while permitting to the surrounding population the free run of the greater portion of the forest, will be found difficult and probably hopeless. His Excellency in Council does not desire to discourage the efforts made in the direction indicated in the orders on the previous year's report, but possibly further experience may shew that unrestricted cutting, grazing, and burning over the whole area, with the exception of a few closed blocks, is incompatible with the conservancy of the forests. It seems to be agreed that the system of rotation is to be so worked as to leave open those parts of the forest which are best situated for the convenience of the villages resorting to them, and no to close any part of the unreserved forests against cattle.

10. The Governor General in Council is of opinion that it is a matter worthy of careful consideration, whether it would not be preferable to reserve permanently those blocks which can now be closed without inconveniencing the people. A permanent addition to the area of reserves would thus be obtained, which would at once be closed absolutely and protected from fire, until re-stocked, and which would eventually be available to supply the wants of the people when the unreserved forests surrounding these blocks shall have been exhausted. This suggestion, His Excellency in Council desires, should be considered by Deputy Commissioners in consultation with the Conservator and district forest officer, who should form a committee for the purpose. The requirements of each group of villages should be considered in detail, and as soon as the enquiry in one district has been completed, a report should be submitted for your consideration, the Governor General in Council being informed of the result. The reserves of the Central Provinces, as they stand at present, are so unequally distributed over the country that they will only suffice to satisfy the demands of the population in a few districts. Betul, Hoshangabad, Seoni, Mandla, and part of Nagpore and Saugor are, His Excellency in Council understands, fairly well provided with reserves, and in some other districts the absence of land at the disposal of Government precludes the formation of reserves; but numerous districts remain with a large area of unreserved forests, where no reserves exist, and where, therefore, when the district

and malguzari forests are exhausted, no forest land will be available to satisfy the requirements of the people.

11. Should the suggestions here made be found practicable, it may be possible gradually, district by district, to relieve the Forest Department of the care of the unreserved forests, so as to leave them free to concentrate their attention upon those tracts which have been demarcated as permanent Government estates. The requirements of the future being thus assured, Deputy Commissioners of districts will not find it difficult to combine a due regard for the present requirements and convenience of the people with such attempts at guarding against an unduly rapid exhaustion of the woodlands, which will then remain exclusively under their charge, as circumstances may permit. Against this plan it may be argued that it only apparently provides for the future, by assigning to it blocks of forest much smaller in extent than those which are now barely sufficient to satisfy the requirements of the people, and that these necessarily small reserves will, when their turn comes, be exhausted in a short time, proportional to their extent. The reply to this objection, His Excellency in Council observes, is that every exertion must be made to bring these reserves into a high state of productiveness, by closing them absolutely and excluding fires, and then, as soon as they are sufficiently improved to admit of being worked, cuttings must only be made by the officers in charge, and the produce sold alongside the cart-road or outside the forest. In this manner, if their working is regulated by a well-devised plan of operations, it will be found that one acre will yield as much produce as 20 or 50 acres of the unreserved forests under the present system.

12. It cannot, as a matter of course, be expected that the reserves will ever serve as grazing grounds on any large scale. The aggregate area of the unreserved forests is now reported as 17,604 square miles. If, of those, say 3,000 more square miles are added to the reserves, so as to raise the total area of these to (say) 5,000 square miles, or 6 per cent. of the total area of the province, then 14,600 square miles of unreserved forest will remain available for pasture in addition to the malguzari forests.

13. The suggestions here offered amount simply to this—that a detailed estimate must be made of the present and future requirements of the sub-divisions of each district, and of the area of well-stocked forest which will be sufficient to meet their requirements. This estimate can, under the most favourable circumstances, only be an approximation to what may eventually be required; this, however, will be no drawback, for in no district probably will it be possible permanently to reserve a sufficiently large area, and in most districts the reserves will necessarily furnish a small portion only of the forest produce required by the population, which, it may be supposed, will by that time have largely increased, but the increase of which it is obviously impossible now to estimate. Our efforts at the present time, though they are not likely to meet the whole of the future requirements, will still be in the right direction, and the permanent reservation of defined, though limited, areas of reserves will surely prove more beneficial to future generations than the probably fruitless attempts to preserve the forest on large and undefined areas, over the greater portion of which the villagers' cutting, grazing, and burning will be permitted.

14. The financial results of last year's administration have been satisfactory. The gross revenue from the reserves which you state was Rs. 1,04,028, amounted to $1\frac{1}{4}$ anna per acre. This is not much; but these forests will require many years of rest before they can be expected to yield a large return. From the unreserved forests the gross revenue of Rs. 4,64,339 amounted to about five-eighths of an anna per acre.

15. The Governor General in Council concurs in the commendation which you have bestowed upon Captain Doveton, the Conservator.

REPORT

ON

THE FOREST ADMINISTRATION

OF

BRITISH BURMA

FOR

The year 1873-74.

RANGOON:
PRINTED AT THE P. W. SECRETARIAT PRESS, RANGOON.

1874.

British Burma.

FOREST DEPARTMENT.—No. 1396-63.

FROM

CAPTAIN W. J. SEATON,

CONSERVATOR OF FORESTS,

BRITISH BURMA.

TO

THE SECRETARY TO THE CHIEF COMMISSIONER,

P. W. D., BRITISH BURMA.

Dated Rangoon, the 16th September 1874.

SIR,

I HAVE the honor to submit the Annual Report of this Department for 1873-74.

2. The delay that has occurred in its submission is to be attributed chiefly to the length of time occupied in the compilation and printing of the statements I. and II., which are of such a nature as to require very careful attention and revision on my part: my time and that of my office establishment has also been greatly taken up with other and very important matters connected with—

(1)—The District Forest Rules.

(2)—Report on the Thingan Forests, Tavoy District.

(3)—Proposals for increasing the *personnel* of the forest, executive and office establishments in connection with the late Officiating Inspector General's "Forest System of Burma."

(4)—Measures for an increase to the areas under forest conservancy and the operation of the forest rules, in the forests west of the Irrawaddie river and in the Tenasserim Division; the latter necessitating consultation with the Commissioner of Tenasserim.

3. All of the above measures demanded early attention, and consequently led to considerable delay in the submission of the Report. I may also mention that the current duties of my office, particularly in the matter of correspondence, have greatly increased of late, a natural result doubtless, of the extended operations of the Department in timber work, and its having to deal with many additional subjects to which its attention has been drawn of late.

4. The Report although for the year 1873-74, contains a complete record of the work and operations undertaken in the dry season of that year, and in some instances not really brought to a close till the setting in of the rains in May. This of necessity delays the submission of Reports on the part of Divisional Officers, particularly if they are deputed to other duties during the season, as was the case with the Deputy Conservator, Rangoon Division.

In future to insure the submission of the Annual Report, Divisional Officers will be instructed to furnish all *available* information by the 1st June, and the Annual Report will be compiled accordingly, the printing of it commencing not later than 1st July.

I have the honor to be,

SIR,

Your most obedient Servant,

W. J. SEATON, CAPTAIN,

Conservator of Forests,
British Burma.

REPORT

ON

THE FOREST ADMINISTRATION

OF

BRITISH BURMA

FOR

The year 1873-74.

Annual Report dated 1st July 1874, on the management and conservancy of the British Burma Forests, for the Financial year 1873-74, by CAPTAIN W. J. SEATON, *Conservator.*

SECTION I.

INTRODUCTION.

SPECIAL.

UNDER this head no additional matters of interest have to be recorded.

FOREST LEGISLATION.

2. During the year an act entitled Act XIII of 1873, granting authority to the Local Government to frame rules subject to the confirmation of the Governor General in Council, for the levying of duty on and control of timber in transit, on the rivers and creeks of British Burma, came into force on 7th September 1873. In Notification No. 5 F., dated 31st March 1874, the following rates of duty and regulations regarding its levy, were prescribed by the Local Government with the sanction of the Governor General in Council, for all timber imported into British Burma, except that which is the produce of the territories of his Majesty the King of Burma :—

	Ad valorem duty.
(1).—Teak and Thingan *(Hopea Odorata)* with its varieties ...	7 per cent.
(2).—On other white or yellow wood	6 „
(3).—On Thitkadoe *(Cedrela toona)*, Thitka *(Pentace Burmanica)*, Padouk *(Peterocarpus)*, and all other red and brown woods...	7 „
(4).—On black mottled or "Zebra" wood	7 „

3. During the year a draft of rules for the management of timber depots and Revenue Stations and control of timber in transit, on the rivers of British Burma, was framed by Mr. Baden Powell, Officiating Inspector General of Forests, under the provisions of Act VII of 1865, and submitted for the sanction of the Governor General in Council.

4. A report on the forest system of British Burma with proposals involving important changes in the treatment and management of the forests, was also submitted by the Officiating Inspector General, together with a Revised Draft Forest Rules, based on Act VII of 1865, for the orders and confirmation of the Governor General in Council.

5. The main features of the Revised Draft Forest Rules, are—

(1).—Their application to the whole of British Burma; they being based on a proposed Notification also submitted for Legislative sanction, under Section 2, of Act VII of 1865, defining all waste lands covered with trees and shrubs, and not legally disposed of, to be Government Forests.

(2).—Exclusion of all matters connected with river control and timber duty.

(3).—Formation of Ordinary, Special and District Reserves; the latter under the control of district officers.

(4).—Definition of the duties in detail of forest officers of all grades.

FIRST PART—SPECIAL.

I.—State Forests and Leased Forests.

6. During the past year there has been a considerable increase in the area of the State Forests in the Eastern Prome Division, and a small reduction in those of the Salween Division and Sittang Division.

7. *Demarcation sanctioned.*—The final demarcation of the following tracts, 137·5 square miles in extent, was sanctioned by the Local Government in Public Works Department, No. 305-20F., dated 6th February 1874.

Prome Division.

	Square miles.
Thayetmyo District East Yoma Block—	
Embracing the teak localities at the source of the Boolay Stream ...	125
Thabyeelha; as a Cutch Reserve, on the lower Hills south of the Pudday Stream	12·5

In neither of these areas are there any villages or cultivation of any description whatever.

8. *Delay in obtaining opinion of Civil Officers.*—For the demarcation of these and other tracts on the Bangoong, a large northern affluent of the Boolay Stream, proposals were submitted as far back as 1871-72, but the Deputy Commissioner was not in a position to visit them till the following year.

The boundaries were so selected as to exclude all villages and permanent cultivation, and provide large areas also on the lower hills for *toungya* cultivation. Strong objections were, however, raised by the Deputy Commissioner to several of the outlying tracts, on the ground that the people of several Chin and Burmese villages, finding themselves restricted in the selection of areas for *toungya* cultivation in their own vicinity, would abandon their villages and emigrate back into Upper Burma.

The total area of teak localities proposed for reservation was 123·35 square miles, and this figure has been maintained by including within the Yoma Block limits, certain tracts not required for *toungya* cultivation.

9. *Demarcation sanctioned of Forest Reserves.*—In P. W. D. No. 1800-80 F., dated 30th June 1873, the demarcation was authorized of the following tracts, as fuel reserves, contiguous to the line of the Prome Railway:—

	Square miles.
Choungnagoon	·53
Htsatpoke	7·27
Tseetqueng	3·17
Total ...	10·97

The reduction in the area of the Choungnagoon Reserve from 2 to ·53 square miles, was in accordance with the orders of the Local Government, directing the withdrawal of boundaries to a distance of quarter mile from all cultivation and villages.

10. *Decrease in area of State Forests in Salween and Sittang Divisions.*—During the year the Assistant Commissioner, Pahpoon, having represented that the proximity of the Moochoung Reserve to that settlement was detrimental to the extention of cultivation and the well-being of the settlers, it was ruled by the Local Government in No. 2192-28F., dated 7th August 1873, that this reserve be thrown open to the people, and arrangements made for the removal from it of all marketable teak timber, with the ultimate object of abandoning it as a reserve.

11. When the demarcation of this tract was approved of by the district authorities, the increase of the settlement was probably not anticipated. There will now be a reduction of 3·43 square miles in the area of State Forests in the Yoonzaleen District.

12. On a reference from the Deputy Commissioner, Toungoo, to the effect that certain land was required for orchards by the villagers of Kyoukpatoe and other villages on the bank of the Thoukyeaghat Stream, the Local Government sanctioned, in P. W. D., No. 350-20F., of 10th February 1874, the exclusion of an area of 78·25 acres from the Pyoon-choung Reserve.

13. *Demarcation approved of.*—The demarcation of the following tracts has been definitely agreed to by the Deputy Commissioner, Thayetmyo District, after consultation with the Officiating Inspector General and the Conservator, and a visit to those localities with Mr. Hume, Assistant Conservator, in charge Prome Division.

EAST THAYETMYO DISTRICT.

		Square miles.
As reserves of "*Acacia Catechu*"	Upper Satsoo-wa	7·5
	Bangoong	3·0
	Tendaw	4·5

WEST THAYETMYO DISTRICT.

As reserves of "*Acacia Catechu*;"	Kheeba-Kyaw contiguous to the Irrawaddie ...	22·5
	South Mudday	27·5
	Total area ...	65·0
Arakan Yoma Block, comprising all the teak localities at the sources of the Mendoon and Mudday Streams, and entire forest area without villages and cultivation, contiguous to the Arakan Yoma (approximate area.)		300

The necessary joint report and recommendation have been submitted by the Deputy Commissioner, regarding the above areas.

14. At the close of the year the demarcation of the following tracts was agreed to by the Deputy Commissioner, Prome, after consultation and a visit to the district with the Conservator.

	Square miles.
North Nawing.	
1.—Yoma Block	61·25
2.—Tsoon Choung Nubbai-byoo	6·05
	67·30
Middle Nawing.	
1.—Yoma Block	32·71
2.—Pwaygen-Shoayloung	20·59
3.—Thitkat-Ayoh Toung	4·50
4.—Quaymeedoh ... ... (in extension of Gway Cho Reserve)	3·80
...	61·60
South Nawing.	
1.—Yoma Block	52·72
Mahathaman.	
1.—Thayet Choung Nyoungbendet	7·9
	60·62
Total in Prome Division ...	189·52

15. The several Yoma block tracts form one continuous reserve, in which *toungya* grounds have to be formed for a few scattered Karen villages of small size. The other tracts are exclusive of all villages and *toungya* cultivation.

16. The reduction in the area originally proposed, viz., from 243·93 to 189·52 square miles, is due to the objections raised by the Deputy Commissioner, Prome, similar to those noted in the case of the Thayetmyo District proposed reserves.

Many of the tracts thus excluded have been so encroached upon by the fast-increasing "Chin" and Burmese population, as to have become considerably changed in character within the last few years. The Shway-laydoo Forest, for instance, in the north Nawing, formerly a teak tract of considerable extent, and abounding in timber of magnificent growth, now consists merely of narrow belts and patches of teak on the crests of the ridges, surrounded by abandoned *toungya* clearings in all stages of growth in the hollows, ravines, and on the more even slopes.

17. *Tharrawaddie Division.*—After a joint local inquiry by the Assistant Commissioner, Poungday, and the Conservator, the demarcation of the following tracts noted in paragraph 12 of Progress Report of 1871-72, was definitely agreed to, by the Deputy Commissioner, Prome, and the necessary proposals were submitted regarding them a little after the close of the year :—

	Square miles.
West Shwaylai Forest, embracing the teak localities at the sources of the Padetmyoung, Kyaydeing, and Gway-douk-queng choungs ...	16·0
East Shwaylai Forest: the tract between the Bwet, Shaboung and Padinben Reserves	5·5
Kyeebyoo (in extension of the Shaboung Reserve)	3·42
Block Reserve, embracing the teak localities at the sources of the Shwaylai and its tributary, the Laizay Stream	52·25
Total area ...	77·17

18. In the proposed block reserve *toungya* grounds will have to be provided for three small Karen villages: the other tracts are free from all villages and *toungya* cultivation.

19 The Shaboung Reserve was visited by the Assistant Commissioner, Poungday, in company with the Conservator, and the alteration in boundaries noted in para 11 of Progress Report for 1872-73, was found to be unnecessary.

20. *Areas approved of as fuel reserves.*—The selection of the following areas, as fuel reserves for the Prome or Irrawaddie Valley (State) Railway, was approved of by the district authorities after consultation with the Conservator and Mr. Hume, the Assistant Conservator, in charge Prome Division, and after a joint visit to the sites in the Tharrawaddie Division by the Deputy Commissioner, Henzada, and the Conservator, accompanied by Mr. Popert in temporary charge of the Division :—

PROME DIVISION.

	Square miles.
Toonyea (north of Nawing choung)	16
Sinmeeswai (south of Prome)	6
Pouktaw (south of Prome)	5
Total ...	27

THARRAWADDIE DIVISION.

	Square miles.
Choungzouk (north of Zeegoon—Mimboo Choung) ...	... 2
Choungnagoon (in extension of Choungnagoon Reserve) ...	... 1·47
East Thendawyo (between the Thongzai and Beeling streams) ...	... 4·25
West Thendawyo	... 4
Total area	... 11·72

21. *Rangoon Division.*—In the proposed fuel reserves noted below, after rectification of boundaries had been completed, a preliminary notice prohibiting all cultivation and felling of timber, was issued by the Deputy Commissioner in accordance with Schedule I. of the Forest Rules.

	Square miles.
South Thayet Choung between 38th and 40th mile of line	1.6
North Thayet Choung between the 41st and 45th mile	2·9
Thanat Choung from 50¼ to 53rd mile	10·5
Meening Choung, between the 60th and 62nd mile	1·4
Hmaubee Choung, one mile west of Enjingoon, at 30th mile	4
	20·4

Subsequently, the Deputy Commissioner intimated approval of the immediate demarcation of the following areas, or portions of those noted above; circumstances having precluded the passing of a final opinion on the remainder of the proposed reserves:—

	Square miles.
Between 40th and 42nd mile, east of Prome Road	1·68
„ 43rd and 46th mile, west of „	2·986
„ 62nd and 64th mile, east of „	1·42

22. The following is a *resumé* of the progress made during the year under review and previously:—

	Square miles.
Areas sanctioned; finally demarcated as State Reserves up to close of 1872-73...	134·30
Less area abandoned in the Yoonzaleen District (Moo Choung Reserve) ...	3.43
	130·87

Areas sanctioned during past year as State Forests in the Thayetmyo District—

	Square miles.
Abounding in teak and other valuable trees	125·0
In forest of cutch or *Acacia Catechu*	12·5
	137·5

	Square miles.
Tharrawaddie Division.—As fuel reserves for Irrawaddie Valley (State) Railway	10·97
Total area demarcated and sanctioned as State Forests...	279·34

Areas definitely agreed to as State Forests by district officers, and awaiting final sanction of Local Government at close of year—

	Square miles.
Prome Division.	
Thayetmyo District.—East of Irrawaddie; Forest of Cutch (*Acacia Catechu*)...	15
„ West of Irrawaddie Forest of Cutch (*Acacia Catechu*)	50
„ Arakan Yoma Block	300 (Approximate.)
Prome District.—East of Irrawaddie; forest of teak and other valuable varieties 146·68 square miles, subject to provision for Karen *Toungya* grounds	189·52
Tharrawaddie Division.	
Prome District.—Forest of teak and other valuable varieties (52·25 square miles, subject to provision for Karen *Toungya* grounds)...	77·17
Total area approved of by district officers; proposals submitted for sanction of Local Government	631·69

23. *Permanent boundary marks.*—The erection of permanent boundary marks of the following description at the salient angles and main points in the boundaries of the more accessible reserves, was sanctioned by the Local Government in P. W. D., No. 2219-28F., dated 9th August 1873:—

Cylindrical masonry pillars five feet in height inclusive of hemispherical top, and three feet in diameter, with a foundation two feet in depth.

24. *Sittang Division.*—In the case of the Pyoon-Choung Reserve, the erection of these boundary marks was delayed, pending the reference by the Deputy Commissioner, noted in para 12, and rectification of boundary line.

25.—*Tharrawaddie Division.*—Preliminary arrangements were made for the erection of pillars on the boundaries of the fuel tracts near the Prome Road, at a cost of Rs. 16-8 each, but water being difficult to procure, the divisional officer decided upon deferring action till the monsoon set in.

26. *Partial clearing of boundaries, and renewal of boundary marks.*—The boundaries of all the reserved forests in each division were inspected during the year, and the boundary marks (boards affixed to trees) renewed, where necessary.

27. In the Prome Division, the boundaries of the Gwaycho Reserve were cleared under the supervision of Mr. Hough, to a width of 30 feet, of all vegetation, except large trees. Owing to the dense growth of bamboo on the ground, the work entailed considerable expense, but, as its primary object was the exclusion of fire, two-thirds of the expenditure is undoubtedly chargeable to that head.

The length of the boundary line cleared was 11·9 miles, and the cost Rs. 1,130-11-0, or Rs. 94-3-7 per mile.

28. A sum of Rs. 437 was also expended in clearing the boundaries of the Choungzouk Reserve, 29 miles in length. The width maintained, was considerably less than 30 feet, and the vegetation being less dense, the work did not cost more than Rs. 15 per mile.

29. The renewal of boundary marks in these reserves entailed an expenditure of Rs. 10 or about 4 pie per mile.

30. In the Tharrawaddie Division, the expenditure in clearing boundaries and renewal of boundary marks of all the reserved forests, 78·831 square miles in area, amounted to Rs. 281-14-6.

(2)—Requirements of the Surrounding Population.

31. As is well known, the wants of the people are amply met by the produce of the unreserved forests. In two instances, and entirely as an experiment to meet the wishes of the civil authorities, permission was granted to two villagers to collect minor forest produce, such as thatch, grass and useless wood fit for fuel, and bamboo, in the Thitcho and Bwet Reserves; these reserves being contiguous to the villages and originally selected more with a view to check "ya" cultivation than any other object.

3.—Protection.

32. *Tharrawaddie Division.*—One case of cutting a *toungya* within the limits of the Shaboung Reserve was discovered, and disposed of by a fine of Rs 50 in the District Court.

In the Kyouk-kee Toung Reserve a Gway tree (*Spondias Mangifera*) was discovered by the Conservator to have been felled without authority.

33. For the care of the recently sanctioned fuel reserves at Htsatpoke and Tseetqueng, it was found necessary to appoint foresters temporarily; two on Rs. 15 and Rs. 10 per mensem respectively.

34. *Prome Division.*—Two cases occurred of unauthorized felling of Gway trees in the Gwaycho Reserve. The parties implicated, being at the time in the employment of the department, were fined by the Divisional Officer.

The three remaining defendants in the case alluded to in para 26 of Progress Report of 1872-73, were convicted and fined Rs. 20 each.

35. *Rest-houses.*—During the year the rest-houses at Quingyee and Jeobenaing were completed, and two others were in course of construction at the close of the year at Wyne on the Gamoung Stream, and Tsayoua on the Minhla Stream.

These, with one more at Koungloungdine, on the Koon-Beeling, and two more in the upper Shwaylai and Toungnyo valleys, will probably complete the chain of rest-houses required for the Tharrawaddie Division. They are all on or near the laterite tracts, at the foot of the hills, where travelling is comparatively easy throughout the rains.

36. It is intended to continue this chain of rest-houses throughout the Prome and other divisions as demarcation work progresses.

The construction, by the Public Works Department, of branch roads, has been sanctioned by the Local Government to connect the Prome Road, in places, with the foot of the hills. This also will greatly facilitate the control of the reserved tracts.

4.— Management and Improvement.

Prome Division.

37. *Toungya Plantations*—The experiment referred to at para 30 of the previous year's Progress Report, has not been attended with good results.

The blanks or portions not planted with teak in seven of the older *toungya* or "*jhoom*" clearings, were ploughed at the commencement of the rains, and cutch seed sown broad-cast over them, but seven months later when inspected by Mr. Hume, no trace of the cutch could be found.

38. Seven new clearings were also ploughed, and teak seed sown in rows six feet by three feet apart.

Mr Hume's report shews satisfactory results in the case of only one. In two others, 30 per cent. of the plants had come up but in a weak condition, while in the remainder, not one single plant could be seen. It was observed that the young plants had been much obstructed in growth by the straw of the previous rains, paddy crop, which had been reaped at a height of three feet: the straw, however, is admitted to be of service, to some extent in the dry months, in protecting the teak plants from the sun's rays.

39. *Exclusion of fire.*—Measures were again taken, but without success, to exclude fire from the Gwaycho Reserve, although no precautions were neglected.

Mr. Hume reports—"Besides the cleared line (referred to under demarcation) "the boundaries and roads crossing the reserve were patrolled by watchers daily, "morning and evening, to insure the observance of the rules prohibiting the use "of fire-arms and trespass. Notices issued by me and endorsed by the Deputy "Commissioner, were posted up on all roads in or near the reserve, as well as "published through the subordinate revenue and police officials, in all villages in "the district. A gang of coolies could always be obtained from the coolies "employed in demarcation work. The beat of each patrol was five to six miles "in length.

"All precautions were ineffectual; the whole country was burning at least "three weeks before the usual season, and hundreds of new *toungya* clearings "were ruined for cultivation.

"At the close of March all danger from without was at an end, and still one-"third of the reserve remained untouched by fire. On the last week of April, "this was deliberately set fire to by some hunter or traveller, who had gone off "the road to a spring about 100 yards distant. A reward has been offered and "the matter taken up by the Police. Had the jungle fires appeared at the usual "time, I make no doubt the reserve would have been secure against all danger "from fire, if not wilfully raised."

40. The fact must not be lost sight of, as remarked by Mr. Hume, that this reserve, 10·5 square miles in extent, is surrounded almost on every side by *toungya* cultivators—chiefly Chins, who look upon it as an obstacle to extending their cultivation wherever and whenever they choose, and are consequently badly disposed to the department. At the same time protection would have been considerably facilitated and rendered surer, if the thorough-fare during the hot months had been diverted to some road outside the Reserve.

41. The introduction of Karén cultivators resident in the reserve would, as suggested by Mr. Hume, be a great step towards protection; but it is questionable whether they could be induced to establish themselves in such a reserve for some years, or until considerable areas of mature bamboo jungle could be counted upon as fit for *toungya* cultivation, as they are far more particular in the selection of sites, as regards soil and vegetation for *toungya* cultivation, than the Chins or Burmese, who appear to spare nothing of the forest, even on the most dry and exposed ridges.

42. The only feasible method of ensuring exclusion of fire is, for an officer of considerable tact and judgment to be located some months annually in the vicinity of the reserve for the purpose of cultivating the acquaintance of the headmen and men of influence among the Chins; and disabusing their minds of whatever erroneous impressions they and their people may entertain regarding the object and consequence of forest reservation. As these people also suffer severely by the premature burning of their *toungya* clearings, as was the case this past season, endeavours should be made by him with the assistance of the local revenue officials to induce them to combine to form and maintain fire-paths, around the *toungya* clearings of their respective villages, in accordance with the practice of the Karens in the hills. In fact the inquiries instituted by the Conservator seem to show that a proper system of fire-tracing by villages, would be only too acceptable to the Chin and other *toungya* cultivators who now complain loudly of each others short-comings, and that all that is necessary is, for a definite scheme to be set on foot in which the headmen could look for the support and encouragement of the local revenue and other officials. When this is done, and the thoroughfare through the reserve is closed during the hot months to all except the *toungya* cultivators in the immediate vicinity, the *toungyas* surrounding the reserve, however numerous they may be, will, as is the case with the Sinzway Reserve, Salween Division, cease to be a source of danger, but on the contrary render protection more sure.

43. *Expenditure*—The cost of patrolling amounted to Rs. 275-12, to which if Rs. 753 be added on account of fire-paths, the total expenditure incurred on this reserve may be estimated at 1,039, or Rs. 91 per square mile.

THARRAWADDIE DIVISION.

44. *Toungya Plantations.*—An examination in January, and subsequently, of the *toungya* clearings planted with teak, for the improvement of the reserved forests under the *toungya* plantation system, gave the following results :—

Reserves.	*Acres.*	*Acres.*	*Average number of teak plants per acre.*
"Boben Choungwa" (by Yabines) ...	...	4·25	900
Mokkah-Beeling by Yabines of Kyoungyoua ...	4·25		
Karens resident in the reserve: Panlay Tay...	94·125	159·367	... 524
Karens resident in the reserve: Tsa-oh ...	36·062		
Karens resident in the reserve: Shwēkior ...	22·5		
Karens of Oung Bwai	2·43		
Myoung and Minhla proposed reserves :—			
Karens of Panyea		13	... 676
„ of Shwezin, Gnaaye, Pahaye		32·5	... 813
Total ...		209·117	... 725

The expenditure incurred was as follows :—

	Rs. A. P.		Rs. A. P.	
Planting at 10 Rs. per 1,000 plants; and capitation taxes, &c., of cultivators	2,063 10 0	...	9 13 0	per acre
Bonus to cultivators for fire-tracing (exceptionally high in the case of the Minhla Myoung plantations, owing to their small size). ...	319 0 0*	...	1 8 4	„
Purchase and conveyance of teak seed (part to be borne in future by cultivators) and cost of measuring up work done.	388 8 0	...	1 13 8	„
Total ...	2,771* 2 0	...	13 3 0	

45. As the areas are extended, the cost of protection against fire will be less; there will also be a reduction in collection of seed in future, and hence the expenditure is susceptible of reduction to Rs. 12 per acre for the first year.

In some instances during the past year, the "Ya" or land tax was paid by the department in addition to the capitation tax of the cultivators, but this will not be the case when the entire area under treatment falls within the limits of the reserves made over to the Department.

46. Considering that many of the cultivators were new to the work, and that some were incapacitated by fever, the results during the past year must be deemed very satisfactory, the areas taken in hand being not only fairly stocked with teak plants, but also protected from fire throughout the dry season. Much credit is

certainly due to the Divisional Officer and Mr. Popert, for their careful management of the Karens.

47. *Extension of toungya plantations.*—Towards the close of the year, additional areas aggregating 238 acres were taken up in extension of, or contiguous to those already planted up; and a nursery 1¼ acres in extent formed for raising Padouk and Pymma seedlings to be planted out jointly with teak, in suitable places in the *toungya* clearings.

48. *Forest planting.*—Arrangements are also being made for planting up an area of five acres of bamboo jungle with teak seedlings in order to test the capabilities of teak thus treated and the cost of a direct system of forest planting. According to latest reports to hand from Mr. Hume, the work was progressing favorably.

49. *Former toungya plantations.*—Several of the older *toungya* plantations were examined by the Conservator in company with the Divisional Officer, and although little had been done to them besides excluding fire, yet the teak saplings were found forcing their crowns through the young bamboo and other seedlings around them, and to be in need only of a little judicious clearing overhead in places.

50. That the Mokkah Beeling locality is favorable to the growth of teak, is evidenced by the size of some trees planted out by the Karens in 1863. A measurement of 40 trees out of 250 originally planted, in rows of nine and four feet apart, and subsequently only protected from fire, gave the following results :—

		Feet.	Inches.
On site of deserted village on crest of a ridge east of the Yea-gnan, a feeder of the Thayet Choung.	Maximum girth (at six feet from the ground) ...	2	2½
	Minimum girth	0	10¾
	Mean	1	4½

These trees have entirely suppressed all undergrowth, and have been sheltered and drawn up by bamboo of fine growth, of the "Theik" variety, which here surrounds them.

51. *Exclusion of fire.*—With the exception of 17 acres of the plantation of 1866, the Boben Choung-wa Reserve, 744 acres in extent, was successfully protected from fire by means of a cleared line, 60 feet in breadth, and some internal lines, and by employment of watchers during the hot months.

The ingress of the fire which, however, caused but little injury, is reported as having resulted from ignition of some high grass (outside the reserve), which by an oversight on the part of Mr. Dansey, was left unburnt in February. The expenditure was for clearing Rs. 204-4, and watchers, 277, or in all Rs. 481-4.

Fire was successfully excluded from the entire Mokkah-Beeling Reserve of 22 square miles, with the exception of 28 acres which accidentally caught fire on the occasion of the Karens firing the new plantation clearing. The small area thus burnt, was confined to portions not yet brought under teak cultivation.

On the north and west sides along internal lines, direct measures were adopted for the formation and maintenance of broad fire traces; coolies being hired, and an establishment of watchers employed under the control of Forest Ranger, Moung Way. Elsewhere, the work was left entirely to the Karens, who received separate remuneration for it. The entire expenditure was Rs. 2,111-6-3 for cooly hire, &c., and Rs. 324-8, pay of watchers, or Rs. 2,435-14-3 in all, equivalent to Rs. 110 per square mile, which is somewhat in excess of the average of the previous year—the result doubtless of much wider fire-paths being maintained.

52. Consequent on the difficulties experienced during the previous year and the paucity of officers in this division, it was deemed unadvisable to renew the experiment of excluding fire from the Kangyee Reserve.

Salween Division.

Sinzway Reserve—Yoonzaleen District.

53. *Toungya plantations.*—The area, about 19 acres, sown with teak during the past year, is reported as exhibiting very indifferent results; the number of

teak seedlings counted being very few in some *toungyas*—270 being the maximum.

It is the opinion of the Deputy Conservator, that the seed used was of very inferior quality, and that the Forest Ranger, although stationed in the reserve for the greater part of the monsoon, neglected to supervise the work, particularly the planting up of blanks.

54. *Forest planting, Attaran District.*—Late in the year, arrangements were made for raising teak with Padouk and Pymma, over an area of 50 acres in the Mohoo-choung Forest on the west bank of the Zammee River. The method being followed out is that of dibbling in seed and raising the plants in nurseries, and setting them out at 15 feet distances apart, along lines opened up through the bamboo jungle, on the site of former *toungya* cultivation where large trees are scarce. Arrangements were also made for planting out Cutch and Thingan (*Hopea*) varieties, over separate and suitable areas.

55. *Exclusion of fire.*—Fire was successfully excluded throughout the entire dry season from the Sinzway Reserve, .14 square miles in area; the work being left as formerly in the hands of the Karen Forester in charge, assisted by an extra peon and the Karen *toungya* cultivators in the vicinity.

The Wa-moo choung Reserve of 2·75 square miles, was also protected from fire by the Foresters in charge.

56. *Sittang Division.*—The Pyoon-choung Reserve, 5·49 square miles in extent, was protected from fire throughout the past season at an expenditure of Rs. 266-10.

57. *Total area treated under the Karen toungya system.*—The following is a summary of the progress made under the Karen *toungya* system :—

		Area planted with teak up to close of 1873-74.	Additional areas under treatment.
Tharrawaddie Division	Mokkah Beeling Reserve ...	212·37 ...	143
	Minhla Myoung proposed Reserve ...	45·5 ...	95
	Boben-choungwa Reserve ...	15·25 ...	...
Salween Division	Sinzway Reserve	93·8 ...	15
	Acres ...	366·92 ...	253

or a total of 620 acres treated under this system.

58. The upper Thoongzai Forest was examined by the Conservator, and subsequently by Mr. Rind, with reference to its suitability for planting operations; but the season was too far advanced to admit of the Karens under Sorcay Pala shifting into the locality selected above Way village.

SECTION II.

UNRESERVED OR DISTRICT FORESTS.

I.—Area and Boundaries.

59. Nothing additional has to be recorded under this head.

The designation, Unreserved or District Forests, is hardly applicable to the large area which must of necessity fall under this classification for want of a more suitable one.

60. On the occupation of the Province in 1853, all the forests were declared to be the property of the State, and the felling of teak, without permission, was prohibited; but in 1865, certain boundaries were notified as forming the limits of the Government forests, or more correctly speaking, that portion of the Province which was subject to the Forest Rules based on Act VII of 1865, and within which the reservation of teak as a distinct species, was to be maintained.

61. Of the large area of the Government forests, the tracts already sanctioned and contemplated as *reserves*, form a comparatively small portion; and consequently the area *unreserved* is extremely large but embracing, as it does, a considerable extent of land under cultivation, the name *unreserved or district forests*, in the sense of *forest* areas and district forests, may be said to be hardly applicable to areas of this description.

(2).—Requirements of the surrounding population.

62. Throughout the Province there is now but one opinion as to the necessity for protecting the more valuable trees in the general interest of the people. In a country with so sparse a population as this, there has been for years a disposition to put off the consideration of all measures which threaten in the least degree to control the people in the use of forest products, or interfere with the privileges hitherto accorded them of helping themselves at will and without restrictions of any kind, to whatever they found in the forests. As long as there was an abundance of the particular descriptions of wood and forest produce chiefly in use with the people of the district, all interference was deprecated.

63. For several years, however, the demand for wood and forest produce on the part of the larger towns and villages at a distance from the real forests has been greatly on the increase; and as the tracts nearest to the waterways have become exhausted in the lower part of the Province, the timber dealers have been led to push their way into others which, in many instances, form the main sources of supply of large villages in their vicinity. Then, as can be readily understood, complaints were to be heard of the wholesale, reckless manner in which the timber dealers felled and removed valuable trees hitherto used solely by the people of that particular locality.

64. In some cases these results were expedited by the forest people themselves, who are generally quite ready for a small consideration to assist in the extraction of the timber around their villages. In this manner, large areas have been almost denuded of Kanyin trees (*Dipterocarpus alata*), and Eng (*Dipterocarpus tuberculatus*), of marketable quality and size; and latterly, trees of as small a size as four feet six inches in girth, have been largely felled.

As complaints became more rife, the conclusion was forced upon district officers that sooner or later, measures must be adopted to protect the people of their districts against the injury arising out of the forests in their vicinity being denuded of valuable trees.

65. As recorded in Progress Report for 1871-72, para. 35, various objections were raised at that time to the formation of district forests, but it was evident that the memorandum on this subject prepared by Captain Douglas, and circulated under the authority of the Chief Commissioner, was misunderstood, its main object being believed to be the formation of district forests with the view of obtaining revenue on *all forest produce* taken both by the people in the vicinity and outsiders.

66. When the subject of protecting valuable trees was brought before a Committee of senior district officers convened in July 1873, for the consideration of certain revenue matters, the outlines of a draft of rules was adopted and approved of by the Chief Commissioner, the Conservator being instructed at the same time to frame a draft of forest rules in consultation with the Government Advocate and district officers. It was only, however, towards the close of the year that replies were received from all the officers in question.

67. From their several opinions, it may be said that, generally, all direct interference with, or levying duty, except to a very small extent, on forest produce for local requirements, is strongly deprecated; and that restrictive measures such as limiting the size of trees to be felled are recommended chiefly in the case of timber required for purposes of sale.

68. With the people left free in many localities to help themselves, as before, to valuable trees of small size; and without any sound system of conservancy in force for regulating the proportion of of trees to be felled, it will be apparent that District Forest Rules of this nature cannot do more than check, to some extent, the rapid destruction of the more valuable varieties in use with the people. If this object is attained, and at the same time areas are marked off as district reserves, it may be said that the measures now contemplated are suitable for present circumstances.

69. It has also to be remembered that a considerable portion of the present forest area must be ere long occupied by cultivation, and hence there would be no advantage in initiating at the outset anything but the most simple system of conservancy for forests to be controlled by district officers. Direct and sudden changes in administration are always to be deprecated; and this may be said to be particularly the case in a Province such as this. As the draft District Forest Rules aim on the whole at slight changes, and considerable areas of forest must ere long be taken up for cultivation purposes, the propriety at present of merely extending protection to a few individual species, without regard to areas, cannot be doubted. It is of course understood that it will be necessary, as already mentioned, to mark off and demarcate certain areas as district reserves for the production of the better varieties of wood required by the people.

70. In the proposed draft of District Forest Rules, the payment of fees for removal of various valuable woods has been provided for; and doubtless, considerable sums will be thus obtained by district officers towards meeting the expenses connected with the enforcement of the rules and starting District Forest Reserves for improvement.

That the introduction of the district rules is much needed, there can be little doubt, judging from the destruction of Kanyin (*Dipterocarpus alata*) and the large quantities of undersized timber of Pyinkado (*Xylia dolabriformis*), and other woods brought for sale to the principal towns and villages on the banks of the main rivers.

71. The chief descriptions of timber imported into Rangoon and its neighbourhood for local use, free of all restrictions, are—

1. Eng; (*Dipterocarpus tuberculatus*).
2. Kanyin; (*Dipterocarpus alata*): both in the form of logs 15 to 18 feet in length, and from 4 feet 6 inches to 6 and 7 feet in girth, the former description of timber being lashed to bamboo.

Latterly an important feature is the importation of wild mango (*Mangifera*) chiefly used for manufacture of Kerosine oil boxes.

Pymma (*Lagerstrœmia regina*), is also imported in considerable quantities as well as Pynkado (*Xylia dolabriformis*). Of the several descriptions of timber and bamboo, the following quantities passed the Kemendine Revenue Station (free of duty) during the past year, as the produce of the Hlyne and Western forests:—

	Logs.		*Market value.*
Eng (*Dipterocarpus*)	4,380	ranging from 4 feet 6 inches to 7 feet girth	Rs. 43,675
Mango (*Mangifera*)	1,312	... ...	„ 4,580
Kanyin (*Dipterocarpus alata*) ...	959	... ...	„ 10,175
Pymma (*Lagerstrœmia*)	114	... ...	„ 798
Htain (for firewood)	70	... three feet girth ...	„ 200
Thitpyoo (*Lagerstrœmia sp*) ...	33	... ...	„ 200
	6,868		59,628
Bamboo; ranging from Rs. 2-8 to 7 per hundred or an average at Rs. 3-8 per hundred	1,279,000	(number).	44,765

The better portion of the bamboo is of the Kya-thoung, Myeen and Tin varieties.

72. The timber imported from the Bassein forests, *vid* Bassein, amounted to about 2,000 logs of Thitka (*Pentace Burmanica*), and Thitkadoe, (*Cedrela toona*), the former known locally as Kasheet; also upwards of 100 logs of Pynkadoe: the whole representing a market value of Rs. 20,000. Figures are wanting to shew the quantities imported from the Pegu and Pounglin forests; but 2,330 logs of Kanyin, Eng and Pymma, and 641,000 bamboos of the Wahpyoo, Wa-bo, Tin and Tabendine varieties, are reported to have passed the Kyatsoo Station from the Sittang Forests *en route* for Rangoon and the villages on the Pegu river. Hence, the actual annual consumption at Rangoon of timber other than teak and bamboo, cannot be estimated at less than 12,000 logs and 2,000,000 bamboos, representing a money value of Rs. 1,50,000.

From the Bassein forests 1,800 logs chiefly of Kasheet, Thitka, Pynkado and Kyindouk, are reported to have been imported into Bassein for local use, representing a market value of about Rs. 10,000. From the same forests 4,350 logs were conveyed to Rangoon and other markets.

Into Moulmein several hundred logs of Pyimma and Padouk were imported for local use as well as export purposes, and Thingan timber also for boat hulls.

73. *Exportation of cutch.*—During the past year, the manufacture of cutch was vigorously prosecuted in the Thayetmyo and Prome districts, and northern part of Henzada District. The quantity exported from Rangoon amounted to 2,45,222 maunds equivalent in value to Rs. 12,51,304.

74. The subject of protecting the *Acacia Catechu* was also referred to the Revenue Bill Committee, convened in July, and resulted in proposals being made and approved by the Local Government for the formation of cutch reserves under the special control of the Forest Department, in localities at a distance from the population, and consequently not likely to occasion inconvenience. Elsewhere, viz., in the cutch producing tracts contiguous to and between villages and cultivation, the following measures for enforcement on the part of district officers were recommended by the Revenue Bill Committee and received the sanction of the Local Government :—

1*st.*—The felling of cutch trees for fuel under any circumstances to be prohibited.

2*nd.*—The felling of cutch trees generally outside the special reserved tracts, to be forbidden to all persons who have not obtained a permit.

Provided that the felling of cutch trees *bonâ fide* for the purpose of making a toungya or for building purposes shall not be prohibited.

3*rd.*—Any person wishing to manufacture cutch shall apply for a permit to the Extra Assistant Commissioner in charge of the township, stating the exact spot at which he wishes to establish his manufactory. The application shall be on stamp paper of the value of 1 Re.

4*th.*—Permits shall be given as a rule only to persons residing in the vicinity of the spot where it is desired to carry on the manufacture.

5*th.*—The permits shall be good for one season only. They shall contain an accurate description of the locality where the manufactory is to be established. They shall contain a condition that no cutch trees, which are less than two cubits (or three feet) in girth, at one foot from the ground, shall be felled. They shall also contain a condition that the holders in cutting down the trees shall do so as close to the ground as possible, and leave a smooth slanting surface.

6*th.*—Any person establishing a cutch manufactory without a permit or cutting down undersized trees, or found selling cutch wood as fuel or committing any breach of any of the conditions of the permit, shall be liable to a fine not exceeding Rs. 100 with the confiscation of the wood so cut. The whole or any portion of the fine may be paid to the informer.

7*th.*—Thoogyees (petty Revenue officials) will be reponsible that the cutch rules are not infringed within the limits of their circles.

8*th.*—The permits will be issued by the Extra Assistant Commissioners in charge of townships who will at once report the circumstance to the Deputy Commissioner of the district. Intimation of the issue of the permits will also be given to the Thoogyees.

75. It will be evident that these measures do not aim at any thing but a *partial check* to the total destruction which must, sooner or later, overtake the low-lying cutch producing tracts; special measures being, however, undertaken to

form more or less compact cutch forests in the special reserves in charge of the Forest Department, the preservation of the "*Acacia catechu*" over definite areas, and maintenance of the present valuable export trade may be said to be amply provided for.

PROTECTION.

Tharrawaddie Division.

76. One case of breach of Rule VI, of the Forest Rules, viz, the felling of teak in a *toungya* clearing in the Mimboo District, was discovered, and a conviction obtained in the District Court, the defendant being fined Rs. 15.

Five cases involving theft of timber and felling of teak were disposed of in the Criminal Court, under Sections 403, 426, of the Indian Penal Code, the defendants, eight in number, being sentenced as follows :—

1	Fined				Rupees	60
2	„	...	...	...	„	50
1	„	...	...	...	„	15
4	„	...	...	...	„	7

or in default to terms of imprisonment varying from seven days to two months.

77. *Salween Division.*—Prosecutions were instituted in eight cases involving Breaches of Forest Rules, but four were dismissed : of the remainder, three cases resulted in four defendants being fined Rs. 100, one defendant being acquitted and one log of Thitkadoe (*Cedrela toona*) confiscated.

Two cases were also successfully prosecuted in the Court of the Town Magistrate and District Magistrate of Moulmein.

In one, three defendants were each fined Rs. 100 for disposing of river drift teak timber near Moulmein. In the other, two persons found in possession of defaced teak timber above the Kadoe Revenue Station, were respectively sentenced to a fine of Rs. 300 and Rs. 150, or in default to suffer six months' rigorous imprisonment.

One case of unauthorized removal of teak timber from the Thoungyeen Forest by parties resident within the Siamese frontier line, was investigated and reported to the Local Government.

Towards the close of the year, the unauthorized felling and conversion of some girdled teak trees, was discovered by Assistant Conservator, Moung Poh O, in the Thoungyeen Forest near Myawaddie.

78. *Rangoon Division.*—During the past year, two cases of theft and misappropriation of drift timber were instituted and convictions obtained ; the defendants, two in number, being sentenced respectively to two and one year's rigorous imprisonment. In another case, the defendant was convicted of using a marking hammer illegally, and sentenced to six months' rigorous imprisonment.

79. *Sittang Division.*—In para. 55 of previous year's Progress Report, it was noted that the permits of the Koonoung and Khaboung forests had been cancelled by order of the Chief Commissioner. At the time of cancellation, there being some 600 logs neaped in these forests, a reference was made to the Chief Commissioner by the late Permit Holders, the Bombay Burma Trading Corporation "Limited," which resulted in orders being passed for the extraction of this timber for final examination by the Conservator, at the Poozpondoung Revenue Station ; previous inspection in the forests having shewn that a portion of it comprised timber felled in a green state.

During the year a case involving the confiscation of 420 teak logs was prosecuted in the Court of the Magistrate of Rangoon. The timber represented trees felled green in several forests recently worked under permit by the Burma Company "Limited," and was identified as such by experts in timber at the Revenue Station. An order for confiscation was obtained, but subsequently, as a length-

ened civil suit was apprehended, the Court of the Recorder having reversed the Magistrate's orders for want of jurisdiction, a compromise was effected and half the timber only retained as confiscated.

MANAGEMENT AND IMPROVEMENT.

(a.)—Girdling Operations.

80. In accordance with the proposals of the Conservator, and pending receipt of orders on the proposals of the Officiating Inspector General of Forests, the continuance of girdling operations, on the basis of the working plan of 1868, was sanctioned by the Local Government in No. 3676-1F, dated 18th December 1873.

The results of the work were as follow :—

		No. of Teak trees in working plan.	No. of Teak trees girdled.
Rangoon Division. ...	Oakkan ...	2,000	1,000
	Zamayee South ...		1,000
Tharrawaddie Division.	Bawben ...	3,000	1,001
	Mimboo ...		1,001
	Mokkah ...		1,001
Prome Division ...	South Naweng ...	2,000	2,000
Salween Division. ...	Upper Thoungyeen ...	2,000	2,000
			9,003

81. The following teak trees were also girdled in accordance with the orders of the Chief Commissioner, noted in P. W. D. No. 2165-17F, dated 4th August 1873, as a concession to the Burma Company "Limited," in consideration of the deficiency in number and quality of trees girdled in 1872, and referred to in paragraph 80 of Progress Report for 1872-73.

	Number of Teak trees girdled.
Sittang Division. Koon Forest	2,020

The several forest Sub-divisions in which the work was carried on will be found noted in Statement II.

82. With the approval of the Local Government, and having regard to the increased demand for seasoned timber of the more valuable kinds other than teak, the following trees were also girdled during the year under review :—

	Thingan *(Hopea odorata)* trees, 7 feet 6 inches in girth andabove.
Salween Division.—Lower and Middle Thoungyeen Forests... ...	1,000
	Pinus Massoniana trees of 5 feet minimum girth and above.
Ditto Middle Thoungyeen	100

Before the setting in of the rains these pine trees were to be felled, stripped of bark, and placed on rollers to season.

83. *Experiment for testing effects of girdling Thitka and Thitkadoe.*—By way of experiment, in order to test the effects of girdling in the case of "Thitka" *(Pentace Burmanica)*, and "Thitkadoe" *(Cedrela toona)*, 12 trees of these two varieties were killed in the Salween Forests. Timber of both these descriptions floats in a perfectly green state, but is very liable to crack and split on exposure to the sun.

84. *Rangoon Division.*—In this division the girdling work was carried on under the direct management of Forest Ranger, Tok Poh, and revised to a small extent only by Mr. Rind, Assistant Conservator, while *en route* to the Kawleya Forest, to the examination of which he was specially deputed for a revision of the girdled trees of 1871.

The results of two revision surveys held in the Pagan Toung-choung and Woongalay-choung Sub-districts of the Oakkan District, shewed that the girdle was not in every instance of the regulation depth, otherwise, the work appeared to have been satisfactorily executed. The girdled trees were found to represent 75 per cent. of the 1st Class trees on the ground. In the Zamayee south district the

work was found by Mr. Rind to have been fairly executed and the trees well selected, and representing 67 per cent. of the 1st Class trees on the ground.

85. *Tharrawaddie Division.*—The entire girdling work is reported to have been most satisfactorily executed by Forest Ranger, Moung Kellay; the time occupied being 66 days. The work was revised by Mr. Dansey, Assistant Conservator in 20 days. In the tracts examined, the girdled trees were found to represent 47 per cent. of the 1st Class trees on the ground, in the Mimboo District, and 44 and 51 per cent. respectively, of the 1st Class trees in the Boben and Mokkah districts.

86. *Prome Division.*—In accordance with the procedure of the previous year, every effort was made but with only partial success, to select trees for girdling without the boundaries of the proposed forest reserves in the south Naweng District, 1,050 such trees being selected. Forest Ranger, Moung Oo, was engaged in the work 50 days, besides 15 days, when temporarily incapacitated by an accident. The work was revised by Mr. Hough, Sub Assistant Conservator, in a period of 12 days; all the Sub-districts were visited and 50 per cent. of the trees counted. The work appears to have been fairly executed with the exception of the selection of the trees which, in some instances, was unsatisfactory, owing to the Forest Ranger having in direct contravention of orders, delegated selection and the entire work to the goungs attached to his party.

87. *Salween Division.*—The girdling work in the Upper Thoungyeen was conducted under the management of Forest Apprentice Shway Meah. No revision of the work took place except the examination of a few trees on the line of march; and Assistant Conservator, Moung Poh O, has failed to explain this neglect of duty on his part, he having received instructions to carry out a careful and systematic revision of the work.

88. *Sittang Division.*—To ensure the early completion of the work, an examination of the sources of the Koon stream was carried out by a party despatched from the Tharrawaddie Division during the monsoon, the results being communicated to the Sittang Divisional Officer.

On the commencement of the work, the sites selected were objected to by the Burma Company "Limited" as too high up the main stream. The Permit Holders' Agent being unable, however, to point out a more suitable locality abounding in 1st class trees, the original site was resorted to on 19th January, and the work brought to a satisfactory close by Forest Ranger, Shway Yea, by the 7th March. Owing to the coolies mistaking certain marks affixed to the trees by the Tharrawaddie party, 20 trees, slightly undersized, were girdled and an equal number of "full size" trees had to be girdled to make up the proper complement. In February, the work while in progress, was inspected by Mr. Ferrars, but no revision surveys appear to have been held, although Mr. Ferrars remained five days with the girdling party. Mr. Ferrars, however, accompanied the party to notice the choice of the trees and state of the forests, and reported "the performance of the work was uniformly satisfactory and reflects credit on the Officer in charge; the timber was all of fine quality, so that in general no differences could arise between the Forest Ranger and the Agent of the Permit Holders." The Forest Ranger appeared nevertheless to have a very indefinite idea of the term *marketable timber*, and had to be enlightened accordingly by Mr Ferrars.

The work was finally revised by Mr. Adamson, the Divisional Officer, between the 16th and 20th March.

89. *Teak trees freed from creepers.*—In connection with the girdling work, 2,711 creepers are reported to have been cut in the Koon Forest, Sittang Division. The number cut in other divisions is not reported: generally, time will not admit of a systematic and careful examination and revision of such work, and consequently reports as to the exact number of creepers cannot be always deemed reliable.

In the Salween Division, the foresters reported having cut 1,500 creepers in the Upper Doomdamee, 950 in the Lower Doomdamee, 1,200 in the Koloon and 60 creepers in the Beeling Forest.

KAWLEYA DISTRICT.

90. In accordance with the orders of the Chief Commissioner in Public Works Department No. 329-32 F., of 9th February 1874, the revision of the girdled trees of 1871, was undertaken with the view of ascertaining the correctness of a complaint preferred by the Burma Company "Limited," the permit holders, to the effect that the girdled trees were deficient in number and not of marketable quality. Owing to the length of time which had elapsed, the discovery of the trees was attended with considerable difficulty. Mr. Rind, accompanied by an agent of the permit holders, was engaged in this work from the 26th March to 13th April, when he was obliged to return to Head Quarters on account of ill health. The results of the countings over certain Sub-districts shewed that there were no grounds for apprehending a deficiency in the number of trees girdled, but that in the selection of the trees, as noted in Progress Report for 1871-72, there had been great want of care.

In all, 1,230 girdled trees and stumps were counted, which gave the following results :—

		Per cent.
Low ground ...	Girdled trees of inferior quality	39·5
	Trees not dead	2·6
High ground ...	Girdled trees of inferior quality	32·3
	Not dead	·46

91. Applying these results to the entire areas over which the trees, killed under Mr. Daly's supervision, in 1871, stand, it may be estimated that they comprise 33 per cent. inferior trees, and 1·3 per cent. of trees imperfectly girdled and not dead. The girdling work appears to be have been to a great extent carried on in very low-lying forest where the trees develop fluted and buttressed stems. And yet there are large tracts abounding in timber of fine growth only a little northward, on the Binedah and Yainway streams, which, being a portion of the Bawnee Forest district, were within the limits prescribed for the girdling work of 1871, and consequently open to Mr. Daly to have visited with his girdling party, as soon as it was evident that the full complement of first Class trees of marketable quality was not obtainable in the Kawleya District.

92. As a native agent of the permit holders accompained the girdling party throughout the work, and they had every opportunity of ascertaining the quality of the girdled trees prior to tendering for the forests, it is evident that they have no real claim against the Department on account of inferior trees. It is also a significant fact that the permit fee tendered for the forests was considerably lower than that offered by the same Firm for other forests.

(*b*).—BLASTING OPERATIONS.

93 *Tharrawaddie Division.*—The sudden decease in January, of Mr. Hood, the Overseer retained chiefly for blasting work, caused a suspension of the work this season in this division.

94. *Salween Division.*—Blasting operations were undertaken early in the season with the view of opening up the Upper Houndraw Forests, the resources of which in valuable woods "Thitka" (*Pentace Burmanica*), "Thitkadoe" (*Cedrela toona*) and "Thingan" (*Hopea odorata*), have hitherto remained almost untouched, owing to a series of rocky obstructions extending a considerable distance up the channel of the Houndraw Stream, above the junction with it of the Meetawang choung.

95. *The Kozai Kogyoon.*—The largest of these obstructions was that known as the Kozai Kogyoon, or 99 Islands, where the stream in forcing its way through a mass of limestone near the surface, has spread out into numerous channels. A passage suitable for the floating of timber was opened up on the east bank by the removal in two places, of 26 and 9 large boulders, estimated to contain respectively, 1732·3 and 544·4 tons of stone.

The expenditure of powder was 132 lbs. 14 oz.

96. The other obstruction opened up for the passage, above the Kozai Kogyoon, of timber, were (1), the Hatsayagyee and (2), the Yeatagoon, both constituting "rapids" or obstructions caused by the stream passing over masses of rocks never sufficiently submerged to admit of timber being floated through. The opening up of these obstructions involved the removal of 969 tons of stone and an expenditure of 63 lbs. 14 oz. of powder.

97. The work was commenced in January and completed in April; the cost of the work was heavy, owing to considerable sums being expended on boat and elephant hire, and purchase of rations for the coolies, who could not be induced to work in this locality unless supplied with all they needed.

98. The total expenditure including pay of Overseer D'Costa, temporarily transferred from the Rangoon Timber Depot, and one native overseer, amounted to Rs. 2,179-5.

99. *Prome Division.*—In the Moungta, a tributary of the Mudday-choung, some obstructions were removed and dragging paths improved by the permit holders. The Hlowa choung obstructions noted in paragraph 91 of previous year's Administration Report were examined by Mr. Hume who thus reports: "At "present these obstuctions completely prevent the floating out of timber from "the forests beyond, which are rich in teak. To open the channel will be a diffi- "cult and expensive work. The banks of the stream at this point are precipitous "and studded with huge boulders which would certainly become detached and roll "into the stream under the influence of the strong concussion which would attend "the blasting of the rocks at present blocking up the water-way. Inquiries shew however that with care and small boring and consequently small charges of powder, the rocks could be safely lowered in height to admit of timber floating out.

(c).—Clearing of Streams.

100. After an examination of the lower course of the Toungnyo stream, late in the season, by the Conservator and Mr. Popert, in company with the Deputy Commissioner, Henzada, and Assistant Commissioner, Mengyee, arrangements were made for deepening and clearing a small channel or creek in the south side, known as the Kyee-pen-tsa-yea choung, below Htantaben.

During the rains, the channel of the Toungnyo commenced to silt up at, and above Htantaben, to such an extent, as to occasion floods in both the Henzada and Prome districts, considerably heavier than have been experienced for some time. A reference was subsequently made by the Deputy Commissioner of Henzada, to the Commissioner of Pegu, with a view to concerting measures with the Forest Department for the preservation of a deep channel throughout the entire lower course of the Toungnyo, as well as those of all the Tharrawaddie streams exposed to like danger of silting up.

(d).—Survey and Examination of the Forests.

101. The work connected with the survey and examination of the forests during the past season embraced—

(1).—Selection of tracts suitable for treatment as Special Reserves in the the Rangoon and Salween divisions.

(2).—Survey of the Upper Houndraw Forests, Salween Division, (above the Kozai-Kogyoon obstructions), with reference to their resources in valuable trees other than teak.

(3).—Examination of the Thingan *(Hopea odorata)* forests of the Tavoy District.

(4).—Selection of suitable tracts for cutch reserves in the Henzada district, West of the Irrawaddie.

(5).—Examination of teak localities contiguous to the Burmese frontier in the Sittang Division.

(6).—Examination of tracts abounding in Thitka (*Pentace Burmanica*), and Thitkadoe *(Cedrela toona)*, in the Sittang Division.

RANGOON DIVISION.

102 *Selection of tracts for demarcation as Special Reserves for improvement.*—After a preliminary examination by the Conservator, the tracts drained by the Nat-choung, and embracing also the Nya-ee Kyaw Forest from Way as far northword as the Kyouktala and Queayjar hills, was selected for examination.

Valuation surveys over a total area of 752 acres combined with a rough survey with compass and chain by Mr. L. Rind, gave the following results and *data* sufficient for the compilation of a sketch map of the locality.

Teak trees on 100 *acres.*

1st Class.	2nd Class.	3rd Class.	4th Class.
above 7′6″ girth 6′ girth and above	4′ 6″ girth and above	1′ 6″ girth and above	Seedings.
725	1,757	2,431	2,580

103. The results calculated for 100 acres in the case of other valuable trees are.—

Kanyin (*Dipterocarpus alata*)	291
Thinwin (*Pongamia glabra*)	792
Pynkadoe (*Xylia dolabriformis*)	1,603
Thingan (*Hopea odorata*)	90
Thitnee identical with Thitka (*Pentace Burmanica*)	22
Pymma (*Lagestræmia regina*)	962

Further details will be found in Statement I.

The western and southern portions of the tract comprise chiefly moist and evergreen forest, while more eastward, between the Thoongzai stream and its tributary, the Nat-choung, the forest is for the most part deciduous, with an undergrowth of bamboo of the Kyathoung (*Bambusa polymorpha*), Tin (*Cephalostachyun per gracile*), and other varieties.

104. The teak occurs in the greatest profusion along the crest and upper side spurs of the Nya-ee Kyaw, aud the hills to the north. Near the streams and on the lower spurs, there are large areas covered chiefly with mature bamboo jungle, marking the site of former *toungya* cultivation, and suitable in every way for treatment under the Karen *toungya* plantation system. With more or less moist forest on two sides, and the Thoongzai stream on the third, this tract which is also well removed from the population, may be said to be easy of protection against fire, as well as suitable in other respects for treatment as a special Reserve.

105. *Salween Division.*—Early in the season, the Conservator accompanied by Assistant Conservator, Moung Pho O, examined the Pakaboh Forest and the Forests on the sources of the Mohoo-choung, both situated between the Zammee and Winyeo streams, tributaries of the Attaran river.

106. The Pakaboh was found to be a stream of very limited capacity for floating purposes, and the area near it, suitable for planting teak and other valuable trees, also somewhat confined.

107. The growth of teak throughout this tract is, however, exceedingly good, although in many parts standing on ground but slightly elevated above the large "ens" or swamps, which form a characteristic feature of the plateau between the Zammee and Winyeo streams. Valuation surveys over 181 acres gave the following results;—

AVERAGE ON 100 ACRES.

1st Class	2nd Class	3rd Class	4th Class
43	38	140	239

108. The Mohoo-choung Forest was then examined by Assistant Conservator, Moung Poh O, who executed a series of linear or Valuation Surveys, combined with a rough survey, with prismatic compass and chain. The results have not been communicated in time to admit of incorporation in this report. The teak tracts on the Mohoo-choung are limited to a few isolated patches on more or less level or undulating ground, as is the case elsewhere throughout the Attaran district. The area occupied by lower hills having good soil and covered by mixed forest of deciduous and moist trees, with an undergrowth of bamboo of the

Kyathoung and Wa-goke or Wa-pyoo varieties, is very large; and as these hills are drained by several large tributaries of the Mohoo, all excellent floating streams, the locality may be considered suitable for treatment as a special Reserve

109. The sparseness of the population throughout the upper part of the Attaran, and the frequent occurrence of belts of moist and evergreen forest, will render the exclusion of fire, from a reserve formed here, a comparatively easy matter.

Hitherto labor has been the main difficulty in the Attaran, but latterly small settlements of Siamese Shans, and immigrants from the Laos territory, have established themselves on the river banks, and there is every reason to believe that with judicious management and care, these people could be counted upon for planting and other works of improvement.

Salween Division.

110. *Survey of the Upper Houndraw Forest.*—The examination of the Upper Houndraw Forest commands considerable interest from the fact that this locality has been almost a *terra incognita*, described on most maps as an uninhabited and inaccesssible region covered with masses of scarped rocks and limestone cliffs.

The examination by the Assistant Conservator, Moung Poh O, who proceeded through the forests on the west side as far south as the Siamese frontier, and returned by the east bank of the Houndraw, bears out the general correctness of the report, particularly in regard to the west side, which appeared to be seldom or ever visited even by the rhinceoros hunters, who are about the only people who care to penetrate into such a country, the ground being covered for miles with small and large masses of limestone-rock, and chiefly belts of moist and evergreen forest with an undergrowth of canes. From the fact that the side feeders are merely shallow channels studded with masses of rock and winding through high undulating ground with a gradual rise to the south and west, the Upper Houndraw Forest may be said to represent a high limestone plateau, dotted here and there with scarped limestone hills resembling cliffs, and divided in the centre by the passage which the Houndraw stream has formed for itself.

111. On the west side owing to the enormous extent of high plateau which had to be traversed, there was little of interest to note in the vegetation beyond the presence of Padouk *(Pterocarpus dalbergioides)* and Thingan *(Hopea odorata)*, in various localities between the sources of the Lampha-choung and west bank of the Houndraw stream. The only teak tract met with was a small belt on the head waters of the Taylay or Wengkadoung-choung, a little below the Talay Koke limestone hills. Believing that he had struck a teak locality extending southward from the sources of the Mittigate Kyouktaga-choung, on the Attaran side, Moung Poh O crossed the frontier, here an imaginary line drawn between certain hill tops, but failed to discover teak any where to the southwest, although he proceeded a considerable distance into Siamese territory along the sources of the Taylo, another tributary of the Houndraw, on the west side.

Time did not admit of the streams which were crossed being explored with reference to the condition and extent of the Thingan *(Hopea odorata)* and Thitka *(Pentace Burmanica)* producing forests on the banks.

112. The Valuation Surveys consequently give but a small average of these valuable varieties over the entire area surveyed.

On the east bank of the Houndraw, immediately below the Siamese frontier line, the forest bore traces of having been brought under *toungya* cultivation and proved the existence at one time of population in this wild region—probably people who harboured the dacoits and elephant thieves who gave so much trouble formerly in the Amherst district.

113. The following is the result of Valuation Surveys over 876 acres on the east side of the Houndraw which, although not so rugged, resembles in many respects the country on the west-side:—

AVERAGE ON 100 ACRES.

Thingan	Thitka	Thitkadoe	Padouk.
29	14	38	21

The Upper Houndraw Forests, above the Kozai Kogyoon obstruction, extend about 20 miles in a direct line from north to south, and being on an average 10 miles in width, may be estimated roughly as covering an area of 200 square miles. The Valuation Surveys are over too small an area to admit of anything but a very rough guess being attempted of the resources of the entire forest, but it may be safely assumed that the quantity of mature trees of Padouk (*Pterocarpus dalbergioides*) and Thingan *(Hopea odorata)*, and other valuable varieties, is very considerable, and will fully repay the expenditure incurred this season in opening up the obstructions in the Houndraw Stream.

114. *Examination of the Thingan Forests (Hopea odorata), of the Tavoy District and part of the Mergui District.*—Mr. Elsner, Assistant Conservator of Forests, was engaged in this duty from the early part of January to the 11th April: a considerable portion of the time was, however, occupied in travelling by boat up the Tavoy River and along the sea coast. The result of his work was on the whole satisfactory as furnishing important information relative to the area of the Thingan producing forests, their position and resources. Thinganet or Thingan-Kyouk (*Hopea odorata*), was found (as is the case throughout the province), on the banks of the streams, but to such an extent as to form a very important element in the vegetation.

115. Valuation Surveys over 1·3 square miles in the Upper Tavoy Forests, and those lying to the west and near the sea coast, on the Endaya and other streams, some falling into the Henzai Basin, and others discharging into the sea, gave the following results calculated for 100 acres :—

Trees I Class.		Trees II Class.	Trees III Class.
Seven feet six inches in girth and above.	Six feet in girth and above.	Four feet six inches in girth and above.	One foot six inches in girth and above.
109	150	253	517

IV Class ; Seedlings ... 814

The surveys also furnish considerable amount of information regarding other varieties of trees such as Thitka *(Pentace Burmanica)* Thitkadoe *(Cedrela toona)* and Yemanay, *(Gmelina arborea.)*

116. The extent and resources in mature timber of the Thingan Forests of the Tavoy District are thus estimated on the *data* supplied by Mr. Elsner :—

	Thingan-et and Thingan-kyouk.		*Thingan-pway Thingan-pyoo.*
Upper Tavoy Forests, Zengba and Gan choungs ; approximate areas occupied by Thingan-net, 26 square miles, less nine square miles of localities producing somewhat inferior trees ...	above 6 feet in girth 34,270	Over entire area 332 square miles less one-half for bamboo jungle.	42,496
Endaya : approximate area occupied by Thingan-net, six square miles	9,852	Over 294 square miles less one-half for bamboo jungle.	24,402
Forests on coast and affluents of Henzai Basin ; approximate area 23 square miles, occupied by Thingan-net	26,174		

Mr. Elsner's Surveys furnish also the following information relative to Thitka (*Pentace Burmanica*) and *Thitkadoe* (*Cedrela toona*) :—

	Thitka.	*Thitkadoe.*
Above six feet in girth ; Upper Tavoy Forests : Thitka 51, Thitkadoe, 236 to one square mile	8,466	39,176
Coast Forests and Forests on affluents of Henzai Basin	18,816	(not noted)
	27,282	39,176

117. Mr. Elsner having failed to collect the requisite *data* relative to the rate of growth of Thingan, an examination of several butt ends was made by Mr. Slym, Deputy Conservator, Moulmein, with following results, the concentric rings being assumed to correspond with the annual growth.

Classes.	*Girth at six feet.*	*Age.*
III	One foot 6 inches	20 years
	Three feet	44 „
II	Four feet 6 inches	62 „
I	Six feet	74 „
	Seven feet 6 inches	87 „

118. The season being somewhat advanced by the time Mergui was reached, and there being a difficulty in procuring elephants, Mr. Elsner was only able to visit the Zaway Choung Forest, near the mouth of the Tenasserim River.

Valuation Surveys over an area of 8·32 acres gave the following results calculated for 100 acres:—

Trees I Class. Seven feet six inches in girth and above.	Six feet in girth and above.	Trees II Class. Four feet six inches in girth and above.	Trees III Class. One foot six inches in girth and above.	Trees IV class. Seedlings.
109	150	253	517	184

119. From inquiries instituted by Mr. Elsner, it would appear that the Thingan producing area is much more extensive in the Mergui District, there being Thingan Forests on the great and little Tenasserim rivers, and on all the streams, southward, including the west Pak-choung the Siamese boundary, as well as King's Island and Kithering Island, and nearly all the Islands of the Mergui Archipelago including St. Mathews and and St. Mark.

120. The yield of the Tavoy and Mergui Forests is at present limited to a few hundred logs of Thingan extracted yearly for local consumption chiefly at Mergui and Tavoy, where the prices realized are usually Rs. 10 per log, of 15 to 18 feet lengths and from five to seven feet in girth, of either variety of Thingan. A few hundred logs of other descriptions of wood are also brought down for sale at Tavoy and Mergui *viz.* Yemanay (*Gmelina arborea*), Hmantan, Dagoo, and Kamoung or Pymma (*Lagerstræmia regina*).

121. *Cardamom tracts in the Tavoy District.*—The Cardamom plant was found throughout the evergreen forests, the chief seat of the Thingan, except in forests near the sea coast. Mr. Elsner's report furnished no information regarding the varieties of Cardamom plants to be met with in the Tavoy District, but from the comparatively low price Tavoy Cardamoms command, it is doubtful whether they are the produce of the *Elletaria Cardamomum*, the true Cardamom plant of commerce.

122. *Yeild in other produce.*—The exportation of Cardamoms from Tavoy and Mergui to the Ports of Rangoon and Moulmein, amounted respectively to 7,660 viss, of a market value of Rs. 6,775-8 and about 820 viss, valued at Rs. 820.

123. A considerable quantity of Sapan wood (*Cæsalpinia sappan*), is yearly extracted from the Bean-choung Forest and other tracts, at the sources as well as on the left bank of the Tenasserim River. The wood is extracted in pieces six feet long and nine inches in girth, and realize as much as Rs. 5 to Rs. 5-9 per 100 viss, or 365 lbs, at Mergui.

Last year as much as 89,000 viss were shipped to Dacca.

THARRAWADDIE DIVISION.

124. *Selection of suitable tracts for cutch reserves west of the Irrawaddie river.*—This important work was entrusted to Mr. E. P. Popert, Assistant Conservator, but owing to an accident (which confined him to head quarters for some weeks), the work had to be discontinued, after a few of the cutch producing tracts in the Padashin district and near the Akouk Toung, had been examined.

Valuation Surveys over an area of 247·3 acres gave the following results calculated for 100 acres: —

	Number of trees.	
Cutch (*Acacia catechu*) ...	845	Of which 60 per cent. under one foot six inches in girth.
Pynkadoe (*Xylia dolabriformis*) ...	112	

It is proposed to continue this work next season and extend it into the Bassein District.

SITTANG DIVISION.

125. *Examination of teak localities contiguous to the Burmese Frontier.*—The teak tracts immediately south of the Burmese Frontier and drained by the Yeanee choung were examined by Mr. Adamson, the Assistant Conservator in charge of the Division, with reference to the extraction of timber which has not been hitherto attempted, owing to the lower course of the Yeanee being within Burmese territory.

126. A permit was issued for the working of this locality some years ago but resulted in nothing, the permit-holder being deterred from sending elephants into that part by reason of the disturbed state of the country beyond the Frontier.

The route taken by Mr. Adamson was from the Myohla Police Post in a westerly direction by the sources of the Dounglangya choung, and across the Myohla watershed to a feeder of the Kimbong choung, whence a path led north to the frontier where the Yeanee choung was met with flowing from the south-west.

The teak tracts on the Yeanee choung are described by Mr. Adamson as exceedingly rich in first class trees and dead and seasoned timber, and extending to a considerable distance on either side of the frontier.

127. The area of the tracts within British territory is estimated at 30 square miles, and the average number of teak trees of the first three classes, viz., one foot six inches, four feet six inches, and six feet in girth and above, at six feet from the ground, on 100 acres, was ascertained to vary from 1,350 to 3,796. Mr. Adamson's survey over an area of 86·77 acres gave the following results calculated for 100 acres :—

I Class	II Class	III Class	IV Class.
1,420	307	532	749

128. The large quantity of seasoned teak timber available for removal may be judged from the simple fact that over an area of 86·85 acres, as many as 686 dead trees standing and fallen, were counted.

129. It was at first under consideration to bring out timber from this tract through the Burmese territory, and arrangements to that effect were concluded with the Court at Mandalay, but subsequently, the contractors elected to drag the timber a long distance into the Theing choung, a feeder of the Swah River, and thus have their work carried on entirely in British territory.

SITTANG DIVISION.

130. *Examination of tracts abounding in Thitka (Pentace Burmanica), and Tkitkadoe (Cedrela toona).*—Consequent on these varieties being reserved by notification of the Local Government under Rule XII of the Forest Rules, as recorded in previous year's Progress Report, Divisional Officers were instructed to collect *data* regarding the extent and resources of the tracts abounding in these woods, with the view of determining the size and quantity of timber available for extraction under a rational system of working. It was, however, generally understood that in the Sittang Division these tracts were extensive and the trees very abundant.

131. Mr. Ferrars was specially deputed to their examination in the Sittang Division, but owing to press of work at Shwaygyeen, and severe indisposition, was not able to commence work till the 19th January, when he was already under orders to accompany the party deputed to Western Karennee, and about to leave Toungoo on the 1st March. The results of Mr. Ferrars examination which was of necessity limited to the southern half of the Sittang Division may be thus summarized, in the case of Thitka; the occurrence of Thitkadoe *(Cedrela toona)*, was too limited to need any notice being taken of it.

(1)—Position and area of the tracts abounding in Thitka *(Pentace Burmanica)*.

EAST SIDE.

Moong and Padah Forests.—Thitka ascertained to be extremely scarce; nearly all large trees worked out some years ago.

WEST SIDE.

(1).—*Tracts on the Gnahmway choung, the Hsat and Thayet choungs.*—Extending in the form of a narrow belt one to one and a half mile in breadth and about 10 miles in length, along the rising ground at the base of the hills between the Kyouk-Kyee Myoung and Kwayma-thay choungs: Thitka few, and of large girth, in the southern part, but forming a more or less continuous strip. Trees more numerous northward, but of smaller girth; growth also good and free from buttresses. The entire forest believed by those well acquainted with it to contain 2,000 to 4,000 first class trees. Vegetation, comprising trees of both evergreen and deciduous orders, with an undergrowth of Tsaloo (*Palmaceæ*), the dwarf fan palm. Age of a Thitka tree 12 feet in girth at three feet from the ground, ascertained to be 120 years, and period of maturity, 80 years.

(2).—*Tracts North of the Eintoon choung.*—On a slightly elevated plateau at the edge of the plains about four square miles in extent, and estimated to contain only 200 out of 1,000 first class trees originally standing; general features of forest similar to those of tract No. 1. Growth, good and rapid; trees chiefly three feet to four and a half feet in girth. Seedlings scarce by reason of the jungle fires.

(3).—*South of Eintoon and east of the Yaïnway choung.*—Similar in appearance to tract No. 2; large trees six and seven feet in girth observed.

It will be useful to append *in extenso* some notes extracted from Mr. Ferrars' report.

* * * * * * *

IV.—"Old Poongzohs* and Yahs are not met with in the Thitka Forest."

V.—"The Thitka trees are never so close together as to derive any "benefit for their own species by the removal of large Thitka."

VI.—"The Thitka element has no *rôle*; it might be taken away without "producing any effect in the forest it inhabits."

VII.—"Young growth fails entirely."

VIII.—"The lower classes are universally *bonâ fide*, *i.e.*, capable of rising to "higher classes, and not cripples, as is so largely the case with teak."

* * * * * * *

XI.—"Where there are no wild fan-palms (Tsaloo-ben) there never is Thitka; "but the Tsaloo-ben, which indicates moisture, does not always imply the exis-"tence of Thitka."

XII.—"Thitka does not occur on laterite or any shallow or impenetrable soil."

XIII.—"The too strong representation of Thitka, a deciduous element, would "be destructive to the influences which condition the prosperity of the tree. "Plantations, or any attempt at pure Thitka Forest, would therefore have no "ultimate success."

XIV.—"Few trees with large hollows are met with."

* * * * * * *

"67. Relating to the occurrence of Thitka, the proportion of the different "classes on the acre, I must dispel the notion of there being any acreage "whatever under Thitka. I can explain best what I mean, by an example. "How could the average under poplar be recognized in a tract of country the "roads of which were planted with the tree on both sides at given intervals. "As in the case of the avenue, common sense would require it to be measured "in strips or tree by tree, so in the case of a species occurring as Thitka does, "each individual tree or couple of trees must be taken and dealt with as con-"stituting a little forest of itself, and the aggregate number as so many, separ-"ate forests, the intervening blanks having palpably no relevancy whatever.

* Old toungya clearings.

" A proportion between the classes is noticeable, but it is not sufficiently con-
" stant to allow of its being fairly reduced to figures. To count all the Thitka
" in one of the forests, would be quite feasible, and I should have done so if
" time had permitted."

It would nevertheless have been useful if linear surveys had been carried out on a well concerted plan, whereby the (approximate) number of trees of different sizes could have been determined on 100 acres.

132. Inquiries instituted by Mr. Adamson, the Divisional Officer, were generally conclusive as to Thitka and Thitkadoe being scarce in most of the forest districts, the only exceptions being—

Districts.

(1).—Tsamoh
(2).—Pubbai Sub-district of Khaboung
(3).—Portion of the Swah District.

No estimate could be found of their resources in mature timber.

133. From the Kannee and Koonoung districts, considerable quantities appear to have been extracted by the Karens two or three years ago, and even earlier. On the whole, as remarked by Mr. Ferrars, the Thitka producing tracts may be said to represent detached areas (at the margin of the plains), in which the species occurs in scattered patches or solitary trees. It is evident that in devising a plan of working for these tracts, the necessity for limiting operations to a few of the better tracts furthest removed from the population, and least likely to interfere with the spread of cultivation and population, will have to be duly considered.

To supplement the information obtained by Mr. Ferrars, relative to rate of growth, butt ends of Thitka and Thitkadoe logs were examined both at Rangoon and Moulmein with following results :—

Thitka	*Girth*	*Age of tree.*
III Class ...	1′-6 to 3′-0″ ...	... 17 years
II „ ...	4′-6″ ...	... 32 „
I „ ...	6′-0″ to 7′-6″ ...	... 48 „
		... 63 „
		... 76 „
Thitkadoe.		
III Class ...	1′-6″ to 3′-0″ ...	... 13 „
II „ ...	4′-6″ ...	... 29 „
I „ ...	6′-0″ to 7′-6″ ...	... 44 „
		... 66 „
		... 98 „

(e).—PLANTATIONS.

134. Towards the close of the year, the following area was taken up and cleared in extension of existing teak plantations.

Division.		*Actual area under arboriculture.*
Rangoon : Magayee Plantation, 57½ miles North of Rangoon :		
Total area ...	256 acres	206
less roads and fire-paths	50 „	

Rangoon Division, Magayee Plantation of 1874, *area* 256 *acres.*—This plantation is divided into three blocks embracing respectively the following areas on the high ground between the Magayee aud Doonkike streams.

Acres. Acres. Acres. Acres.

No. 1=92+No. 2= 29+No. 3=135 or 256 acres in all. On the completion of the clearing, firing, lopping, and piling operations, the entire area was taken up by 103 Shan cultivators on the usual conditions, viz., to set out teak plants at 6 feet × 6 feet distances apart, and weed the same till next dry season, for payment of Rs. 10 per acre, and the privilege of raising their own crops between the teak plants. In block No. 3, Padouk seed *(Pterocarpus dalbergioides)* was sown with teak seed, viz., two of the former to one of the latter; and are reported as having germinated freely.

135. The expenditure up to close of the year in this plantation was Rs. 3,111-10, or Rs. 12-2-10 per acre; this does not include Rs. 10 per acre yet due for planting, and capitation taxes of Shans.

136. *Magayee plantation of* 1873, *area* 241·5 *acres.*—Regarding this plantation, Mr. Strettell, the Deputy Conservator in charge of the Division, reports: "This plantatation presents the finest specimen of arboriculture I have seen in "Burma, and reflects great credit on Mr. Nepean. Area thoroughly weeded; "saplings most uniform and averaging four feet in height. There are failures "but so few and far between, that it is with much difficulty they are to be "detected."

Labor.—With the exception of the lopping and piling operations which cost Rs. 2,602, this entire plantation represents the result of the Shan cultivator system.

137. *Cost.*—The expenditure during the year amounted to Rs. 6,339; and the total cost up to close of year is estimated at Rs. 39-7 per acre.

138. *Magayee plantation of* 1872, *area* 170 *acres.*—The saplings in this plantation were trimmed and weeded four times, about 3,000 blanks were restocked, and a fire trace 50 feet in breadth was kept perfectly clear. 51 acres were kept weeded under contract, by Shans, and cost Rs. 339-8: the remainder of the area was under the "daily labor" system which under a well organized plan, is deemed by the Divisional Officer to be cheaper than the other or Shan system, but without the many advantages possessed by the latter.

139. The total expenditure during the year is estimated at Rs. 2,066-13, or Rs. 12-3 per acre.

140. *Experimental cultivation of Ficus Elastica.—Magayee plantation:* With the plants procured from Upper Burma during the year, there are now altogether 252 young trees of "*Ficus Elastica*" planted over an area of 22 acres and ranging from three to nine feet in height. Only a partial clearing or opening has been made around each of these young trees; elsewhere, the forest has been left intact. They are reported to be all fine, healthy, young trees, and Mr. Strettell feels confident that they will succeed well in this province. Consequent on high charges for freight for the carriage of plants from Upper Burma, the expenditure connected with this experiment during the year has been considerable, viz., Rs. 450-12, inclusive of Rs. 102-9, cost of preparing a suitable tract for their reception.

MAGAYEE PLANTATION OF 1873.

141. *Experimental cultivation of Sapan* (*Cæsalpinia sappan*), *with teak.* In accordance with a suggestion by Mr. Slym, Deputy Conservator, Moulmein, an experiment on a small scale was made to test the practicability of maintaining an undergrowth of Sapan (*Cæsalpinia sappan*), in a teak plantation until such time as the Sapan shrubs are large enough to admit of profitable removal, whereby a considerable revenue would be forthcoming as a set off against the original cost of the plantation. At present its selling rate is about Rs. 1 for 73 lbs. and if this quantity, which is equivalent to 1·12 cubic feet of timber, be taken as the yield of one shrub (in 15 to 20 years), a return of *at least* Rs. 50 per acre may be anticipated if the shrubs be at considerable distances apart. Being of a more or less scandent habit, measures will of course have to be taken to guard against the Sapan injuring the teak saplings in their early growth. The experiment has been renewed (in 1874) with an additional supply of seed. The entire results are 123 seedlings of 1873; some as much as 6½ feet in height, and a very large number of seedlings of 1874, too numerous to admit of being counted at present.

MAGAYEE PLANTATION.

Experimental cultivation of various trees.—Experiments were also made with seed and plants of the following varieties:—

(1).—Baobab seed (*Adansonia digitata*). Out of 29 seeds obtained in December 1873, 15 were sown on 6th January, and the remainder during the present rains (July); of the former four

germinated, and the plants from them are two feet in height; of the latter five have already vegetated.

(2).—Marble wood plants believed to be identical with the calamander tree of Ceylon and West coast of India. Fifteen plants obtained from the Andaman Islands have been set out; some seed has been sown in nurseries and the remainder sown over an area of 70 acres of forest

(3).—Ebony seed obtained from the Mergui Forests. Some seed sown in June (1874) has already germinated.

Experiments made with seed of Thitkadoe (*Cedrela toona*), and Palawa (*Garcinia speciosa*) received from the Tenasserim Forests, entirely failed. Experiments are also being undertaken with seed of the following varieties: Engyn (*Pentacme Siamensis,*) Thitka *(Pentace Burmanica), Arducaria Cunninghani, A. Bedwellia, Hardindiogia Monophylla, and Seaforthia elegans.*

143. Seed has also been collected, for experimental purposes of some Caoutchouc yielding creepers; Kyetpoung and Kyetpoungpho, the former believed by Mr. Nepean to be the "*Landolphia owariensis*". Small samples of Caoutchouc were prepared by Mr. Nepean from the juice of those plants. Those first supplied were soft and wanting in elasticity but the last sample appeared to be of very superior quality and very similar to that obtained from the *Ficus Elastica.* It appears that larger quantities must be obtained in order to obtain a definite opinion from those connected with the trade, as to the real commercial value and quality of the Caoutchouc.

144. *Lac culture or propagation of the "Coccus lacca," over definite areas, Magayee Plantation.*—The attention of this Department was called to this art of industry by the Local Government in September, on receipt of a communication from the late Dr. Mason, of the American Mission, Toungoo, to the effect that the production of lac on a large scale and systematic method, was carried on by the Padoung Karens beyond the north east frontier, and suggesting that the Forest Department should depute an intelligent native to the Padoung Karens to obtain the necessary information with a view to the introduction of lac culture in this province. A young Burman recommended by Mr. Bunker, of the American Baptist Mission, was engaged for the above purpose but after a short absence, professed to have found the Karens unwilling to disclose the details of their system of lac culture.

145. With the approval of the Local Government, a promise of a reward of Rs. 500 was made to the Karens, and this resulted apparently in the Burman in question bringing down a quantity of lac fit for removal, and affixing it (in the absence of the Divisional Officer), to suitable trees in the Kannee Forest. Subsequently, he reported the lac as all destroyed by some of the Karens, but the lac not having been examined on arrival or subseqently, and the Burman not returning from a second trip, there is reason to believe, as suggested by the Divisional Officer, that the man was deceiving him throughout the matter, in order to obtain the reward.

146. In October, lac was found on *Ficus* trees in Rangoon; and on further inquiry it transpired that the existence of the insect was known to natives throughout the Province but only to a small extent on solitary trees here and there, and hence not deemed sufficiently remunerative to pay for collection in the form of stick lac.

147. Little being known of the habits of the insects in Burma, it was deemed advisable to apply to the Conservator of Forests, Bengal, and other Officers, for lac with the insect in an advanced state of development. The lac supplied, however, all failed for various reasons.

148. Mr. Nepean, the Assistant Conservator in charge Magayee Plantation, ascertained, by personal observation, that the swarming of the insects took place in November and December and this partly confirmed the information collected by Captain Douglas in the Tharrawaddie Division: Mr. Nepean's first efforts at removing the insects failed, but according to the

latest report to hand from Mr. Strettell, the Divisional Officer, it appears that the experiment has been quite successful and the formation of a lac-producing nursery a *fait accompli.*

149. A little subsequent to the close of the year, Mr. Strettell, Deputy Conservator, who had acquired some knowledge of the *Coccus lacca* in India, and made it the subject of study, was specially appointed under the orders of the Local Government to the control of the lac-culture operations, and directed to draw up a comprehensive scheme for its introduction as a branch of Forest management..

150. *Kyekpyoogan Teak plantation*; 683·5 *acres: 25 miles north of Rangoon.*—The operations in this Plantation during the past year are reported to have been :—

(1).—*Plantation of* 1868. } One weeding and a thorough freeing of
(2).—*Plantation of* 1869. } trees from creepers.

(3).—*Plantation of* 1870.—Two weedings and removal of creepers twice.

(4).—*Plantation of* 1871—Three weedings and one pruning operation; 17 acres of blanks filled up with 20,570 seedlings.

151. Subsequent to July, the plan was adopted of having a fixed work establishment of 20 coolies inclusive of one maistry; and of keeping trees up to a height of ten feet free from creepers, and having weeding performed by cutting down the grass two feet on either side of the saplings, and allowing it to remain where cut. The trees in the 1869 and 1870 plantations are reported to have made most progress, while those of 1868 exhibit the least improvement.

152. *Injury by caterpillars.*—The results of the injuries caused by caterpillars noted in previous year's Progress Report, have been ascertained to be the death of 3,792 and partial injury of 8,138 saplings, which latter will be felled three inches below ground to insure the development of one clear shoot or stem. In future, it will be advisable to fell all young trees when seriously attacked by caterpillars.

The injured and dead trees are thus distributed :—

Block.	Dead.	Injured.
1868	2,043	4,666
1869	1,108	2,249
1870	641	1,223

153. *Expenditure.*—The total expenditure in the Kyekpyoogan plantation amounted during the past year to Rs. 8,841-11-6 or Rs. 12-14-11 per acre. There was a sum of Rs. 251-9 realized as miscellaneous revenue.

154. *Tharrawaddie Division.*—The work in this Division was limited to exclusion of fire from the Plantation at Boben Choungwa and the experimental Plantation at Myodwin, and to fire tracing and cutting of creepers over the Queaymakine Plantation (of 1869), 86 acres in extent.

155. *Expenditure.*—The cost of fire-tracing the Myodwin Experimental Plantation and Queaymakine Plantation, amounted in all to Rs. 72-12 and and Rs. 14-14-6 or a total of Rs. 87-10-6 equivalent to Rs. 8-2 per acre. The fire-tracing of the Boben Choungwa Plantation was included within that of the whole reserve.

The cost of freeing 38,000 saplings from creepers in the Queaymakine Plantation amounted to Rs. 55-8 or 0-10-4 per acre.

156. *Measurement of trees.*—The measurement, by the Divisional Officer, of 50 trees on the slope and crest of the Kanyin Toung (Hill), and crest of the Pungahben ridge in the Queaymakine Plantation of 1869, on 11th January, gave the following results; the soil being a sandy loam one foot in depth resting upon decomposing and disintegrated sandstone :—

Size of trees: girth taken at six feet from ground.

	Height.	Girth.
Maximum	31′	$11\frac{1}{2}$″
Mean	24′	$7\frac{1}{2}$″
Minimum	13′	4″

157. *Sittang Division, Pyoon-choung Teak Plantation of* 1873, 69 *acres.* The planting operations in this plantation, the area of which was ascertained to be 69 acres, were attended with very unsatisfactory results, there being at the close of the season a few plants on the area taken in hand by the Goung with hired coolies, and none at all, or very few on that occupied by hired cultivators. The premature burn reported in previous year's Administration Report only partly explains these results.

158. The seed used was apparently at fault as a large propotion of it failed to germinate both in the plantation and in the nurseries, and added to this, the Goung appeared to have no influence or control over the cultivators (Shans), who are reported by Mr. Adamson as having been indifferent as to whether their areas were properly stocked with teak so long as they obtained their own produce. It is evident that there was a want of discrimination in the selection of such men for this work, which does not compare favorably with the results of former years. The Divisional Officer has made arrangements for taking in hand and restocking the entire area in the rains of 1874, under the superintendence of Forest Ranger, Shway Yea.

159. *Expenditure.*—It is satisfactory to note that the expenditure in this plantation during the past year, was only Rs. 609-12, subject to a reduction of Rs. 69-6 realized by sale of teal seed. This, with the expenditure in 1872-73, viz, Rs. 240, makes a total of Rs. 787 spent on this plantation, or a little over Rs. 11 per acre.

160. *Pyoon-choung Plantation of* 1870 (*area,* 296 *acres).*—A little subsequent to the commencement of the year under review, a fire, originated by some people on the Toongboh Road, spread over 20 acres of this plantation, then in charge of Mr. Dansey, and necessitated the cutting back of a large number of the saplings between the 17th and 29th April, at an expenditure of Rs. 57-8. The fire appears to have been checked by an inner fire-path. During the rains vigorous shoots were thrown out from the stools and found at the close of the moonsoon to be as high and strong as the original plants would have been, had they not been burnt. This plantation received a slight weeding in August and September at a cost of Rs. 86.

161. *Pyoon-choung Plantation of* 1869 (*area,* 185 *acres*).—Only the southern and smaller portion received a slight weeding in August, at a cost of Rs. 31-14. The fire referred to as having entered the plantation of 1870 in the early part of the year, extended over five acres also of this plantation, which necessitated a small expenditure (Rs. 9-8), in cutting back a number of the saplings

162, *Entire Pyoon-choung Plantation, area,* 644·778 *acres.*—Fire was successfully excluded from the entire plantation throughout the whole of the past dry season; the work being undertaken in connection with the protection of the Pyoon-choung Reserve, in which this plantation is situate: the expenditure is shewn under Section I.

163. *Expenditure.*—The total expenditure on teak plantations amounted to Rs. 2,293-10.

164. *Prome experimental Plantation; area,* 66·2 *acres.*—In three compartments aggregating 20·9 acres in extent, a light clearing and cutting of creepers was undertaken. The usual fire-tracing was successfully carried out at a cost of Rs. 26; although on one occasion a mischievous attempt was made to fire the plantation.

165. The total expenditure incurred during the year was Rs. 145.

166. The expenditure on all teak plantations during the year under review amounted to Rs. 30,333-0-1 exclusive of Rs. 450-12, incurred on the "*Ficus Elastica*" experiment.

167. *Sittang Division: Cinchona cultivation at Thantoungyee; altitude* 3,700 *feet.*—During the year, between the 18th June and 20th August, 6,088 plants were set out in the main plantation. At the close of the year (April), 86·3 per cent of these plants were found to be apparently well established, which,

together with the number remaining at the commencement of the year, make a total of about 5,700 plants successfully set out in the following proportion :—

(1)—1,000 *Succirubra* from Darjeeling seed.
1,600 *Succirubra* from cuttings from the Thantoungyee and Plumadoe plantations.
(2)— 200 *Calasaya* from Darjeeling seed.
(3)—2,900 *Condaminia* from Ootacamund seed.

For planting out in the main plantation during the rains of 1874, there are available—

2,000 *Succirubra.*
200 *Calasaya.*
10,000 *Condaminia.*

168. *Propagation by seed.*—In the propagation house, and available for removal to the hardening beds, are the following seedlings :—

14,292 *Succirubra* from Darjeeling seed.
15,388 *Do.* do. Ootacamund seed.
1,743 *Do.* do. Plumadoe plantation seed.

Many of the young trees raised from cuttings and set out in the main plantation in 1871, vary in height from seven feet six inches to nine feet eight inches in girth. The mean increase during the past year of 15 measured trees has been ascertained to be three feet four and a half inches in height, and two and a half inches in girth.

169. *Plumadoe plantation ; altitude 2,200 feet.* The trees set out in this plantation (in December 1868,) yielded a considerable supply of seed for use in the Thantoungyee plantation, viz., 10 oz. from the lower site, and somewhat less from the upper one. The seed from the former failed to germinate and this bears out the opinion entertained by the Conservator as to the unsuitableness of the lower site, and the sickly condition of the trees compared with those on the upper site. The number of young trees (*Succirubra*), in this plantation at the close of the year were—

Lower site 33 out of 83 originally set out in 1868; height 4 to 14 feet, girth 4 to 14 inches.
36 from cuttings of 1871.
Upper site 86 out of 105 original plants of 1868,

(But only one failure since 1871.)
Height ... ... 10 to 17 feet.
Girth ... . 6 to 13 inches.
260 from cuttings.

170. *Establishment.*—The Cinchona plantation establishment has been as follows :—

1 Native Assistant	@	Rs.	50
1 Do.	do.	„ „	15
1 Do.	do.	„ „	12
1 Peon		„ „	10
	Total	Rs ...	87

171. *Scarcity of rice in the hills.*—Owing to the prevailing scarcity, it was found necessary to make special arrangements for supplying rice to the Cinchona plantation establishment. Elephants were used for conveying it to the half way resting-house on the Pathee choung, whence it was carried by coolies to Thantoungyee.

172. *Expenditure.*—The expenditure on Cinchona plantations during the the year was Rs. 1,644-9, and total expenditure up to close of last year, Rs. 9,329-3.

(5.)—Yield and Working of the Forests.

173. During the year the outturn from the teak forests in British territory was as follows :—

	Logs.	Tons.
Brought to Depots by Government contractors in the Tharrawaddie, Rangoon, Sittang and Salween Divisions...	17,685	18,546·9
Obtained from the sea-shore, drift and miscellaneous sources,	4,028	3,775·9
Worked out by permit holders including 470 logs or 117 tons from the Attaran Forest held under leases of 30 years,	26,192	17,311
Total ...	47,905	39,633·8
From other forests there were brought to Depots by Government Contractors :		
Thitka (Pentace Burmanica) and Thitkado *(Cedrela toona)*...	3,189	4463·4
Thingan *(Hopea odorata)* Railway sleepers, metre gauge ...	100	4·2
Total ...	3,289	4467·6
or a total quantity of teak and other woods extracted during the year...	51,194	44101·4

174. These figures exhibit a decrease of 64·2 tons of teak timber, and increase of 1956·2 tons of other woods over the outturn of the previous year.

175. *Government Agency system.*—The yield of the teak forests worked under the Government Agency system shews an increase of 8,528 tons, as compared with that of the previous year. This was the result of the extension of the Government Agency system in the extraction of the confiscated timber from the Sittang Forests, referred to at pages 11 to 16 of Forest Administration Report for 1872-73, and also in the working of several forests in the Salween Division, the leases of which had been resumed by order of the Chief Commissioner, as noted in previous year's Administration Report. The outturn from the forests worked under this system includes 840 logs or 756 tons of teak timber handed over to the Public Works Department, the greater portion of which was of first class quality.

176. *Timber other than teak.*—The extraction of Thitka *(Pentace Burmanica)* and Thitkado (*Cedrela toona*), was undertaken under the orders of the Chief Commissioner to meet chiefly a requisition of Mr. J. D. Capelle for timber, for trial shipment to Europe, operations being limited to trees of a minimum girth of six feet and timber already felled before 2nd June 1873—the date of the Notification of the Local Government prohibiting the felling of trees of these varieties. The timber was obtained from the Sittang and Salween Divisions, viz., 2248·4 tons from the former and 2,012 tons from the latter.

177. The Thingan *(Hopea odorata)* sleepers were obtained from the forests of the Mergui District in the Tenasserim Division, and intended chiefly to test the cost of extraction and delivery at Rangoon.

178. *Departmental Elephants.*—The Department had on hand at the close of the previous year— ... ... 85 Elephants.

Add number purchased during the year, viz :		
For Depot and carriage purposes	3	
,, loan to Contractors	5	8
Total... ...		93
Deduct,		
Paid for by Contractors	4	
Casualties	9	13
Balance on 31st March 1874...		80

179. Information regarding cost of feed of elephants in this Department and the Commissariat Department, will be found in Appendix B. The average cost of feed of each animal throughout the year in this Department, amounted to Rs. 211-11-5 or about Rs. 17-9-8 per mensem; the increase over the average of the previous year being due to the enhanced price of rice.

180. The casualties, nine in number, being only 9·9 per cent of the whole, compares favorably with the casualties in the previous year.

181. The sum of Rs. 15,000 was received from contractors for the value of elephants supplied under the loan system, and a sum of Rs. 5,186-15-7 also realized on account of interest ; the elephant loan bonds bearing interest at the rate of 10 per cent per annum. Both the above amounts would have been considerably augmented had the contractors accounts been closed within the official year, several additional elephants having been paid for out of the proceeds of the work of 1873-74, and recoveries effected to the extent of Rs. 8,870-1-8 for value of elephants and Rs. 2,000 as interest.

182. *Permit system.*—The outturn of teak timber under the permit system exhibits on the whole a decrease of 2,593 logs, or 3,724 tons, but an increase in the yield of many of the forests.

	Logs.
Decrease in Sittang Division...	5,659
Increase in Prome East and West	2,841
Do. Rangoon Division	852
Do. Salween Do.	3,276

The increase is due in a great measure to the high prices which were ruling for teak throughout the year, and to the season being on the whole a favorable one. The decrease in the Sittang Division is of course the result of the resumption on the part of Government, of the forests in which breaches of forest rules had been discovered.

183. During the year, about 4,000 tons (more or less) of Thitka (*Pentace Burmanica*), and Thitkado (*Cedrela toona*), were imported by private parties into Rangoon and Moulmein from forests within British territory; the timber representing the quantity felled (and not disposed of to Government,) before the Notification of 2nd June, and a considerable quantity felled in the Bassein Forests to which the Notification in question does not apply. The export of these woods from the port of Moulmein during the past year was, to—

	Tons.
Calcutta	115
Burma Ports	110
Europe	1,105
Total ...	1,330

From the port of Rangoon a large quantity was shipped after the close of the year 1873-74.

184. The export of other woods from Moulmein comprised—

	Tons.
Padouk (*Pterocarpus dalbergioides*), Madras	50
Pymma (*Lagerstrœmia regina*), Calcutta	88
Thingan (*Hopea odorata*), Dacca	50

185. The export of cutch, the produce of both the British and Foreign forests during the year, has been as follows :—

	Cutch Maunds.	Value. Rs.
Rangoon...	2,45,222	12,51,304

The Custom's returns for the past year shew as exported from Akyab—

	Tons.	Value.
Pyinkado (*Inga Xylocarpa*), Iron wood, to India ...	82	Rs. 4,379
Scantling of other woods Europe	1	„ 60
Do. do. India	117	„ 6,929

SECTION IV.

YIELD OF THE FORESTS BEYOND THE FRONTIER AND MANAGEMENT OF THE KADOE REVENUE STATION.

186. The importation of teak timber during the year from forests beyond the frontier was—

	Logs.	Pieces.	Tons.
By Salween River	75,673	...	101,402
„ Irrawaddie River	6,487	13,875	6,626
„ Sittang River	19,732	81	18,529
Total			126,557

It will be observed that an increase of 48,537 tons took place in the importation of foreign timber by the Salween River.

187. *Increased outturn.*—This was probably owing to the usual average outturn being attained in addition to the timber neaped last season, consequent on the scarcity of rainfall noted in paragraph 150 of previous year's report.

188. The increase in the outturn of the several forests was as follows :—

	Logs.
Karennee	3,619
Kyanetoung	1,528
Mhineloongyee	8,520
Dahgwen	1,388
Foreign Thoungyeen...	969

It is a significant fact that the proportion of undersized timber (below 5 feet in girth), exhibits a steady increase since 1870-71, although by the more careful system of measurement lately introduced, the tonnage over the whole shews an increase—

	Logs.		Undersized.
1870-1871	73,169	contained	4,588
1871-1872	88,417	Do.	9,506
1872-1873	60,650	Do.	9,054
1873-1874	75,653	Do.	16,539

189. The Deputy Conservator, Moulmein, is disposed to attribute it to a more correct system of reporting, the importers finding this to their advantage, notwithstanding the temptation to have as little as possible of their timber exhibited as undersized, in their certificates.

190. The importation of timber by the Sittang River from the Ningyan Forests, also exhibits an increase compared with that of the previous year's outturn, to the extent of 5,549 tons : the result doubtless of the season having been a favorable one and of the outturn being swelled by the neaped timber of the previous year.

191. By the Irrawaddie River, there has been an increase of 545 logs and 13,875 pieces including scantling, a remarkable feature in which was an item of 700 cart wheels. Doubtless, the same causes as well as high prices operated on the working of the Upper Burma forests.

192. In addition to foreign timber imported by the Salween River, the following timber from the British Forests was reported for Revenue at the Kadoe Revenue Station during the year.

From forests worked under—

	Logs.	Tons.
Permits of one to six years' duration, including Attaran ...	12,374	10,394

This makes the total of 88,047 logs registered for duty and Forest Revenue at the Kadoe Revenue Station in 1873-74.

193. The subjoined figures exhibit the importation of foreign teak timber into the Province during the past four years—

	1870-71		1871-72		1872-73		1873-74	
	Logs.	Tons.	Logs.	Tons.	Logs.	Tons.	Logs.	Tons.
By Salween...	73,169	67,315	88,417	81,343	60,650	60,650	75,673	101,402
„ Sittang ...	11,355	10,232	15,347	15,252	12,980	12,980	19,813	18,529
„ Irrawaddie.	17,390	4,937	3,642	1,814	5,942	4,397	20,362	6,626

194. *Timber cleared.*—During the year 89,427 logs were cleared on payment of duty and forest revenue, or 2,118 logs short of the number cleared in 1872-73 : the stock in hand at the close of the year was 30,065 logs, or 1,380 logs less, as compared with that of 1872-73.

195. *Results of the year.*—Mr. Slym remarks as follows :—"There "is not the slightest doubt that the absence of litigation and the greater "safety of the roads as well as the prices timber realized for the last "two years, have greatly improved the condition of the timber trading popul- "ation, and principally in this town where it is clearly visible. The condition of "the Moulmein traders has been slowly improving for the last three years, and "there is every hope that with the passing of the new timber duty rules, which "provide more protection to property and trade, the Moulmein timber trade "will be in the same position as I found it in 1864, and on the whole, Moul- "mein with an export of rice increasing at the rate of 20,000 tons per year, "will have regained its position as one of the principal trading ports in "Burma."

"During the year two small ships and 40 cargo boats were built on the "river banks near Moulmein, causing a demand for crooked timber and favor- "able prices."

Export of teak timber from the Province—"The export of teak from Moul- "mein during the year has been 86,361 tons, being an increase of 7,704 tons, "on exports of past year, and is entirely due to shipments to Indian Ports; "the exportation to Europe shewing a slight decrease, freights being high and "vessels scarce." From the port of Rangoon the export of teak during the past year amounted to 30,057 tons, which is a decrease of 6,287 tons as compared with the previous year. The total quantity exported from the Province was 116,418 tons. There as been a steady demand for 2nd class teak—but chiefly for local purposes, at Rangoon. The export of teak scantling for the Europe market has continued, and recently scantling cut to various sizes, suitable for the construction of railway carriages, has been shipped to English ports.

196. *Export of other timber.*—Of the Thitka (*Pentace Burmanica*) and Thitkadoe (*Cedrela toona*), 1,330 tons were exported from Moulmein, 1,105 tons being consigned to the European markets. In addition, 88 tons of Pyimma (*Lagerstræima regina*) Padouk (*Pterocarpus dalbergioides*) and Thingan (*Hopea odorata*), were exported to Madras and Calcutta.

197. *Kadoe Revenue Station.*—During the year the cash receipts of the Kadoe Revenue Station were as follow :—

	Rs.	A.	P.
Duty on foreign timber	1,91,400	7	0
"Home or forests."			
Duty on British timber	14.767	8	0
Sale of drift, waif and confiscated timber	27,111	8	0
Miscellaneous, fines, &c.	7,083	4	0
Total ...	2,40,362	11	0

198. The expenditure of the station during the year was as follows :—

	Rs.	A.	P.
A.—Conservancy and working	16,178	12	0
B.—Establishments	6,173	12	0
	22,352	8	0

Deducting Revenue for "Home or forests," the revenue of the station will be Rs. 2,03,242-11-0, or Rs. 5,352-10-0 in excess of 1872-73.

199. The falling off of Rs. 21,747-7 under the head—"Duty on foreign timber," as compared with the figures of the previous year, is entirely due to the smaller quantity of timber which cleared the Revenue Station on payment of duty.

200. The number of drift logs made over to claimants during the year was 1,263, and the number sold 1,083, leaving a balance at the close of the year of 740 logs. The work of the Revenue Station has been carried on as usual by the Deputy Conservator of the Salween Division in addition to his other duties.

201. The increase in expenditure under "A, Conservancy and Working," is the result of extended operations connected with sea drift timber, half the proceeds of which are paid to salvors.

SECOND PART—GENERAL.

I.—Financial Results.

202. The amount allotted on account of expenditure in Budget for 1873-74, was Rs. 3,50,000; the Budget estimate of Receipts was fixed at Rs. 7,00,000, so that a surplus of Rs. 3,50,000 was anticipated.

203. The actual revenue of the year has been Rs. 10,68,621-6-8, and was contributed by the several forest divisions in the following proportion :—

	Rs.	A.	P.
Tharrawaddie and Rangoon	4,87,828	6	9
Prome	36,294	15	7
Sittang	2,20,035	13	4
Salween	84,099	8	0
Kadoe Revenue Station	2,40,362	11	0
Total ...	10,68,621	6	8

*204. The expenditure of the Department may be noted as follows :—

	Rs.	A.	P.
A.—Conservancy and working ...	3,32,391	4	5
B.—Establishments	1,42,140	6	3
Allowances, refunds, and drawbacks ...	112	14	0
Total ...	4,74,644	8	8

which leaves a surplus of Rs. 5,93,976-14-0 in favor of the year. The expenditure is 1,24,644-8-8 in excess of original estimate, but is counter-balanced by a large increase in the Receipts; the expenditure being in proportion to the enhanced receipts.

205. A comparative statement of the Revenue and Expenditure of the several forest divisions exhibits the following results :—

Divisions.	Revenue			Expenditure.			Surplus.			Remarks.
	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	
Tharrawaddie and Rangoon ...	4,87,828	6	9	2,68,682	4	9	2,19,146	2	0	
Prome ...	36,294	15	7	15,878	15	5	20,416	0	2	
Sittang ...	2,20,035	13	4	1,23,002	3	6	97,033	9	10	
Salween ...	84,099	8	0	44,615	11	0	39,483	13	0	
Kadoe ...	2,40,362	11	0	22,352	8	0	2,18,010	3	0	
Total ...	10,68,621	6	8	4,74,531	10	8	5,94,089	12	0	

206. If from this surplus the sum of Rs. 112-14-0 be deducted on account of allowances, refunds and drawbacks, the balance is a net revenue, for 1873-74, on—

	Rs.	A.	P.
Home or Forests	3,90,734	3	0
Kadoe or Foreign	2,03,242	11	0
Total net revenue in cash ...	5,93,976	14	0

Compared with that of 1872-73, the revenue of the past year exhibits an increase of Rs. 1,02,894-15-3, although the expenditure has been proportionally heavy.

207. To the revenue of the year also belongs the Permit Revenue to be collected on outturn of 1873-74 from the Thoungyeen and Mittigate Forests, the timber from which arrives at the Revenue Station usually in April, as shewn in paragraph 208.

208. The following sums have to be added in order to exhibit the actual amount to the credit of the Department :—

	Rs.	A.	P.
Permit Revenue due on timber worked in the Salween Division	28,035	8	0
Difference in value of stock of 1873-74 as compared with that of 1872-73 ...	2,53,251	4	0
Total assets ...	2,81,286	12	0

209. It will be observed therefore, that the actual surplus of the year's operations amounts to Rs. 8,75,263-10-0.

210. Compared with that of 1872-73, the surplus here noted contrasts very favorably.

211. The cash transactions of the year may be thus noted :—

DRAWN.

	Rs.	A.	P.
Cash drawn from State Treasuries ...	4,86,493	9	9
Income Tax	17	9	0
Difference between receipts and repayments of deposits	4,096	0	11
Other remittances	1,946	0	5
Advances recovered on account of Bengal Government	2,096	1	2
Total ...	4,94,649	5	3

OUTLAY.

	Rs.	A.	P.
Expenditure of the Department ...	4,74,531	10	8
Difference between receipts and remittances to Treasuries	8,065	10	9
Difference between advances recovered and advances made	8,571	12	11
Allowances, refunds, and drawbacks ...	112	14	0
Cash balance in favor of the year ...	3,367	4	11
Total ...	4,94,649	5	3

212. *Contractors' Timber.*—The expenditure in the extraction of 24,902 logs and 100 sleepers by Government Agency and Forest Contractors, is Rs. 3,79,723-5-3, the average cost per log therefore, is Rs. 15-3-0, or per ton Rs. 14-2-9, being a decrease of Rs. 2-10-4 per log on the cost of outturn of 1872-73, the result of cost of direction, &c., being charged against a larger number of logs.

213. During the year the following sales amounting to 19,743 logs and sleepers took place, the result being as follows :—

Particulars.	No. of Logs.	Amount realized. Rs.	A.	P.	Remarks.
By Public Auction ...	9,955	3,24,360	0	5	Mixed quality.
On indent by P. W. D. Cape Government, and private parties	2,393	1,50,757	0	0	Selected timber.
Sleepers	251	503	0	0	Second quality chiefly.
Drift confiscated and waif ...	4,967	1,85,316	12	0	Superior quality.
Woods of other kinds ...	2,177	50,207	1	0	
Total ...	19,743	7,11,143	13	5	

The average price per log realized over the whole, representing a large proportion of mixed quality, was Rs. 36-0-4 per log, or Rs 28-4-7 per ton. These rates compare very favorably with those of 1872-73, and may be accounted for by the market rate of first class timber being high throughout the year, viz., from Rs. 55 to Rs. 65 per ton.

214. The average for the five previous years were—

				Rs.	A.	P.
1868-69	...	...	...	27	9	0 Per ton
1869-70	...	...	...	29	10	0 „
1870-71	...	...	...	22	5	7 „
1871-72	...	...	...	22	14	0 „
1272-73	...	...	...	20	9	7 „

215. The net revenue realized during 1873-74 has been Rs. 20-13-14 per log, or Rs. 14-1-10 per ton, showing a most decided increase as compared with 1872-73, and is to be accounted for by the handsome prices realized on the confiscated timber from the Sittang Forests, as well as a large quantity of first class timber from the Tharrawaddie and Rangoon Forests.

216. *Permit Timber.*—The outturn from the several divisions in which the permit system is worked, has been—

			Logs.
Prome East and West	...	...	9,906
Rangoon Division	...	...	1,198
Sittang Ditto.	...	...	4,533
Salween Ditto.	...	...	10,555
Total		...	26,192

or 22,001·14 tons, upon which was realized the sum of Rs. 1,49,394-2-3.

217. Deducting the charges to be set off against this timber amounting in the aggregate to Rs. 71,099-12-5, the result is a profit of Rs. 2-15-0 per log, or Rs. 3-9-0 per ton.

The almost total abandonment of this system will henceforth dispense with the necessity for a comparison; the former, or Government Agency system, being unquestionably the more remunerative of the two.

II.—General Remarks.

218. *Deputation of the Officiating Inspector General of Forests.*—Mr. Baden Powell was detained a considerable time at Rangoon after his return from the Sittang Division, as recorded in previous year's Administration Report. After visiting Thayetmyo and Moulmein, the Officiating Inspector General finally left Rangoon for Calcutta in September.

249. *Inspection tours of Conservator.*—In June, the Conservator accompanied Mr. Baden Powell, the Officiating Inspector General of Forests, to Thayetmyo, to concert measures with the District Officer for the demarcation of forests as cutch reserves, east and west of the Irrawaddie River.

220. The Conservator visited the Salween Division in December and examined the Pakaboh and Upper Moh-oo choung Sub-districts of the Attaran Forest, in connection with the selection of a large area suitable for improvement as a Special Reserve.

221. In January, the Kyek-pyoogan and Magayee Teak Plantations were inspected by the Conservator, who thence proceeded to the Upper Thongzai Forest, whence, after examining the Nat-choung and Nya-ee-kyaw Tracts, with reference to their suitableness for works of improvement, he proceeded to the Mokka Beeling Reserve in the Tharrawaddie Division and the tract on the Minhla Stream also selected for Karen Toungya Plantations.

222. After an examination of the work of the previous rains, and an inspection of the Queay-ma-kine Teak Plantation, the Conservator returned by the 19th January to Rangoon via Tsanuay and the Hlyne River.

223. On the 29th and 30th January the Kyatsoo Creek was visited by the Conservator in order to concert measures for the control of timber passing through from the Sittang River, and occasioning at times great inconvenience to boat and other traffic.

224. The Conservator proceeded to Prome in February and was detained in that district until the following month, examining tracts suitable for fuel reserves, accompanying the district Officer to the vicinity of the proposed Middle Naweng Reserves, and visiting also the Shwèlai Forest District in company with the Assistant Commissioner, Poungday.

225. In April, the Conservator visited the sites of proposed fuel reserves on the Prome Road in company with the Deputy Commissioner, Henzada, and the Tharrawaddie Divisional Officer; and proceeding along the entire length of the Tharrawaddie Division, near the base of the hills, returned finally via Queaymakine, Tsanuay and the Hlyne River to Rangoon.

226. *Deputation of Officers to Upper Burma and the Western Karennee territory.*—In November 1873, Mr. G. W. Strettell, Deputy Conservator of Forests, Rangoon Division, was specially deputed to the examination of the *Ficus Elastica* Forests in Upper Burma, and was absent on that duty from the 30th November 1873 to the 5th May 1874.

227. Mr. M. H. Ferrars, Assistant Conservator, attached to the Sittang Division, was deputed to accompany the Mission under the orders of the Deputy Commissioner, Toungoo, to the Western Karennee State. Mr. Ferrars, who was absent on this duty from the 1st March to the 10th May 1874, submitted a report to the Local Government through the Deputy Commissioner, Toungoo.

228. *Deputation of a Forest Subordinate to Arakan.*—Towards the close of the year, Shway Bweng, an extra Forest Ranger, was deputed to Arakan for the examination of a teak locality on the Koladyne River and collection of general information regarding the resources of the Arakan Hill Tracts. His report shews the teak locality to be merely an isolated tract on the Okethailing choung, a little beyond the administration boundary, and containing only 228 teak trees, of which 87 were of 1st Class, 67 of 2nd class, and the remainder entirely of 3rd Class size, there being no seedlings: some old stumps, 17 in number shewed the tract to have been worked many years ago. His report also shewed mature Pymma *(Lagerstræmia regina)*, Nhaw *(Nauclea cordifolia)*, and Pynkado *(Xylia dolabriformis)*, all of excellent growth, to be abundant in many parts.

229. *Free grants of teak timber.*—During the year free grants were made to the following extent under Schedule VI. Forest Rules:—

Tharrawaddie	...	...	...	Logs 43
Prome	...	...	...	„ 117
Sittang	...	...	...	„ 100
Salween	...	...	...	„ 147
			Total Logs	407

230. *Timber for Public Works Department.*—The arrangements undertaken during the year for the supply of teak timber to the Public Works Department comprised the following deliveries:—

In the Sittang Division	...	...	...	Tons 248
Ditto Rangoon „	...	...	...	„ 508
			Total ...	„ 756

231.—*Timber for Cape of Good Hope Government.*—The teak timber referred to in paragraph 179 of previous year's Administration Report, was shipped to Table Bay per Ship *Alexandra*, and very favorably reported upon. Towards the close of the year under review, a second shipment of select teak timber was in course of preparation to the extent of 732 tons, embracing squares ranging in length from 20 to 45 feet, and scantling of both small and large sizes. The entire quantity was selected out of the stock at the Government Depot, Rangoon.

232. *Woods of other kinds.*—The Pine *(Pinus Massoniana)* logs referred to in paragraph 181 of Administration Report for 1872-73, were not received up to the close of the official year.

233. The sample of Thinwin *(Pongamia glabra)*, forwarded to Europe was not favorably reported on; the hardness of the grain rendering it very difficult to work: a piece was tested by a local firm for machinery bearings but found unsuitable.

234. Reports from Europe regarding the arrivals of wood of the Thitka (*Pentace Burmanica*), and Thitkadoe (*Cedrela toona*) varieties, hold out no immediate hope of a steady and large demand springing up for such timber, and of these woods being able to compete with the bastard mahogany and cedar wood imported from South America. With prices generally quoted at £8 to £9 per ton, it is feared that the late trial shipment from this province will result in loss to the principal shipper. Apparently the demand is such as to admit of only *limited* quantities being occasionally profitably disposed of, when freights to Europe happen to be very low.

235. The sale of small quantities of these woods in the Calcutta market has on the other hand been attended with some success; Rs. 65 to Rs. 68 per ton being realized but the demand is likely to remain limited.

236. For local purposes, these woods are occasionally in demand at Rangoon and Moulmein, experiments being made with them in the construction of sheds and godowns, and for manufacture of furniture. Recently, 100 logs were disposed of to the Rangoon Jail for this latter purpose, but at a low price. As a rule the demand for these and other woods is regulated by the price of 2nd Class Teak timber; and as long as the latter continues high, remunerative prices may be expected for other descriptions of timber.

237. *Teak seed.*—During the year considerable difficulty was experienced throughout all the forest divisions in collecting good teak seed and there is reason to believe that the crop was altogether a very indifferent one, both as regards quantity and quality. The quantity supplied on indent to various officers was as follows:—

Conservator of Forests, Bengal ...	... Maunds	38
Commissioner, Cooch Behar ...	... „	50
Assistant Conservator, Chittagong ...	... „	10
Superintendent Hill Tracts, Northern Arakan ...	... „	10
Deputy Commissioner, Akyab ...	... „	34
Dr. Hooker, Royal Botanical Gardens, Kew,	... „	1
Dr. Thwaites, Botanical Gardens, Galle, Ceylon	... „	1
Total Maunds		144

238. *General working of the Department.*—The health of the Department as regards the Subordinate grades has on the whole been good throughout the year, one casualty only being reported in the grade of Foresters in the Sittang Division: cholera was the reported cause.

239. The death also has to be recorded of an old and very useful servant of the Department in the person of Overseer Hood, whose name is connected with all the chief blasting works undertaken by the Department since the introduction of the first measures for opening up the resources of the Hill Forests. In January, he had to be removed from Tsanuay where he was in charge of floating operations, and died on arrival at Henzada.

240. There has been an improvement in the health of the superior grades, the only exceptions being the case of Captain Douglas, Deputy Conservator, Tharrawaddie Division, and that of Mr. M. H. Ferrars; the latter was, however, only temporarily incapacitated for duty, while Captain Douglas was under the necessity of obtaining sick leave.

241. The results of the work of the past season make it very evident that the effective strength of the Department must be augmented if any real progress is to be counted upon in the examination and selection of forests, in demarcation and preparation of working plans for the fuel and other reserves. To meet the great

increase of work involved in the care and treatment of the fuel and cutch reserves, it will be also necessary to increase the staff of Officers in one or two of the larger Forest divisions.

242. *Changes in the Executive Establishment.*—Mr. Nugent Daly, Assistant Consevator, 2nd grade, was transferred to Mysore in Department of Revenue, Agriculture, and Commerce No. 1345F, dated 19th November 1873, and left Rangoon on the 18th January 1874.

243. Messrs. Stratford and Hough, Sub-Assistant Conservators, obtained privilege leave and were respectively absent from duty from 9th July to 9th October 1873, and from 25th July to 6th October 1873.

244. Mr. J. K. Hume, Assistant Conservator, 2nd grade, relieved Mr. Elsner of the charge of the Prome Division on the 22nd October 1873, and the latter Officer was transferred to the Rangoon Division.

245. In November 1873, with the approval of the Chief Commissioner, the Rangoon Forest Office of Agency and control of the Government Timber Depot and the Revenue Stations of Kemendine and Puzoondoung, were separated from the charge of the Rangoon Division, and constituted a distinct charge under a junior Assistant Conservator; Mr. Daly was first appointed to this charge, and subsequently, Mr. G. Stratford, Sub-Assistant Conservator of Forests, who relieved Mr. Daly, on the 14th January 1874.

246. Mr. G. W. Strettell, Deputy Conservator of Forests 3rd grade, was promoted to Deputy Conservator, 2nd grade, in Department of Revenue, Agriculture and Commerce Notification No. 1310F., of 8th November 1873.

247. Captain W. Douglas, Deputy Conservator 1st grade, after suffering considerably in health during the rains, was ultimately under the necessity of proceeding home on sick leave for two years, and left Rangoon on the 4th February 1874.

248. Consequent on the departure of Captain Douglas, the charge of the Tharrawaddie Division devolved temporarily upon Mr. E. P. Popert, Assistant Conservator, 3rd grade.

249. Mr. J. K. Hume, was appointed to the charge of the Tharrawaddie Division, but, up to the close of the year, had to remain in charge of the Prome Division, pending his relief by Mr. M. H. Ferrars, Assistant Conservator.

250. On the 28th January 1874, Mr. E. P. Dansey, Assistant Conservator 3rd grade, was transferred from the Sittang to the Tharrawaddie Division.

251. *Services of Divisional Officers.*—The Conservator takes this opportunity of recording that the control and management of the several Forest Divisions have been generally satisfactory, throughout the past year, notwithstanding the fact that the duties and responsibilities of Divisional Officers have very materially increased of late.

W. J. SEATON, CAPTAIN,

Conservator of Forests,

British Burma.

STATEMENTS.

STATEMENT

FOREST DEPARTMENT

Extract from the Forest Day Books of the Forest Department, British Burma, showing being a continuation of Statement I of Progress Report of

Name and number of Division.	Name of Forest Tracts.	Year of Survey.	By whom Surveyed.	Number of Tracts Surveyed.	TREES COUNTED IN TEAR. I.	TEAR. II.	TEAR. III.	TEAR. IV.	TEAR. Girdled.	KANYIN. Above 3 cubits.	KANYIN. Below 3 cubits.	THINWIN. Above 3 cubits.	THINWIN. Below 3 cubits.
	Zamayee North District.												
RANGOON.	Nadoung-yah Choung ..	1873	Mr. L. A. W. Rind .. Asst. Consr. of Forests	..	..	11	30	28	14	..	..	..	..
	Between Nadoung-yah and Yeanee Choungs ..			..	7	63	94	181	32	..	..	..	..
	On east side of Kyee Gan Choung ..			..	6	87	114	122	25	..	..	..	..
	Thin Gan Choung ..			..	16	93	189	169	66	..	..	..	..
	On to bank of Tsan and to bank of Thaymay ..			..	53	145	236	285	39	..	..	..	..
	On north bank of Mei-mah-shwin, and north bank of Thaymay ..			..	75	265	360	300	57	..	..	..	..
	On east bank of Thaymay, north bank of Thwa-moo-lan Choung ..			..	18	61	48	55	38	..	..	..	..
	On north bank of Kyet, and east bank of Thaymay Choung ..			..	42	170	95	180	57	..	..	..	..
	On north bank of Dah-bar-lah, and east bank of Zamayee ..			..	85	166	109	80	152	..	..	..	..
	Wetsee, South District ..			..	142	321	256	131	108	..	..	..	..
				..	444	1,382	1,531	1,551	588	..	..	..	..
	Thongzai District.												
	Miaysee ..	1874		..	2	..	..	25	..	..	..	..	..
	Kyoukloongyee ..			..	4	4	18	18	..	..	..	..	..
	Kya-kyee ..			..	1	4	5	9	..	..	..	..	..
	Do. ..			..	1	7	40	62	..	..	..	..	..
	Kyouktala ..			..	6	10	63	99	1	..	..	..	..
	Do. ..			..	37	57	62	115	13	..	..	..	..
	Nya-ee-kyaw ..			..	16	..	175	39	43	..	..	..	..
	Queayjar and Nya-ee-kyaw ..			..	1	23	85	104	6	..	..	..	..
	Kyaysee and Nya-ee-kyaw ..			..	78	59	175	160	7	..	..	..	..
	West Nat Choung ..			..	..	..	..	..	..	..	..	..	..
	Miaysee ..			..	4	7	..	110	2	..	..	..	..
				..	150	171	623	741	72	..	..	..	..
	Oakkan District.												
	Pagan Toung Choung ..	1874		..	44	61	152	205	153	..	..	..	..
	Woon-galay Choung ..			..	17	31	25	33	49	..	..	..	..
				..	61	92	177	238	202	..	..	..	..
	Zamayee South District.												
	Choung Kyo ..	1874		..	70	112	100	70	149	..	..	..	..
				..	70	112	100	70	149	..	..	..	..
	Thongzai District.												
	Miaysee ..	1874		..	..	..	..	..	..	2	7	..	1
	Kyoukloongyee ..			..	..	..	..	..	..	18	17	4	24
	Kyakee ..			..	..	..	..	..	..	43	81	24	80
	Kyouktala ..			..	..	..	..	..	..	32	54	43	180
	Nya-ee ..			..	..	..	..	..	..	..	..	8	6
	Quayjar and Nya-ee ..			..	..	..	..	..	..	..	..	10	70
	Kyaysee and Nay-ee ..			..	..	..	..	..	..	..	..	14	72
	West Nat Choung ..			..	..	..	..	..	..	16	21	33	167
	Miaysee ..			..	..	..	..	..	..	..	..	28	33
	TOTAL RANGOON ..			..	725	1,757	2,431	2,600	1,011	111	180	159	633
	Carried over ..			..	725	1,757	2,431	2,600	1,011	111	180	159	633

1.

BRITISH BURMA.

the number of teak trees and woods of other kinds counted from 1873 *to* 1874
Forest Administration, British Burma, for 1873-74.

THE SURVEY TRACTS.												AREA SURVEYED.				NUMBER OF TREES ON 100 ACRES.				
PYNKADOE.		THINGAN.		THITNEE.		PYIMMA.		CUTCH.		PADOUK.										
Above 3 cubits.	Below 3 cubits	Above 3 cubits.	Below 3 cubits.	Above 3 cubits.	Below 3 cubits.	Above 3 cubits.	Below 3 cubits.	Above 3 cubits.	Below 3 cubits.	Above 3 cubits.	Below 3 cubits.	Length of Tract Surveyed.	Width.	Area in Acres.	Total of first three classes teak trees on 100 acres.	Cutch.	Pynkadoe.	Padouk.	Thitkado.	Thitka.
..	..	..	..	..	..	..	..	..	..	..	..	1,000	100	..	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	..	..	7,700	..	..	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	..	..	4,500	..	..	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	..	..	6,500	..	..	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	..	..	11,900	..	..	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	..	..	12,600	...	..	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	..	..	3,800	..	..	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	..	..	9,100	..	..	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	..	..	11,600	..	..	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	..	..	18,900	..	..	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	..	..	87,600	..	201·10	1,669	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	..	..	12,041	..	..	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	..	..	22,740	..	..	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	..	..	15,150	..	..	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	..	..	14,330	..	..	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	..	..	26,750	..	..	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	..	..	17,460	..	..	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	..	..	14,327	..	..	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	..	..	20,800	..	..	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	..	..	36,040	..	..	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	..	..	19,550	..	..	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	..	..	9,210	..	..	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	..	..	208,398	..	478·41	197	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	..	..	12,100	..	..	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	..	..	4,500	..	..	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	..	..	16,600	..	38·10	866	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	..	..	15,000	..	..	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	..	..	15,000	..	34·43	819	..	..	..	..	..
31	15	..	..	1	4	9	17	..	..	..	..	..	..	..	..	..	..	..	..	..
63	..	..	53	3	14	56	65	..	..	..	..	..	..	..	..	..	..	..	..	..
139	117	..	..	..	..	115	173	..	..	..	..	..	..	..	..	..	..	..	..	..
130	205	5	..	..	..	31	151	..	..	..	..	..	..	..	..	..	..	..	..	..
45	87	..	..	..	..	122	25	..	..	..	..	..	..	..	..	..	..	..	..	..
76	77	..	..	..	..	11	30	..	..	..	..	..	..	..	..	..	..	..	..	..
186	109	..	..	..	..	4	35	..	..	..	..	..	..	..	..	..	..	..	..	..
123	133	21	11	..	..	30	64	..	..	..	..	..	..	..	..	..	..	..	..	..
61	66	..	..	..	..	24	..	..	..	..	..	..	..	..	..	..	..	..	..	..
844	759	26	64	4	18	402	560	..	..	..	..	..	..	..	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

STATEMENT

FOREST DEPARTMENT

Extract from the Forest Day Books of the Forest Department, British Burma, showing being a continuation of Statement I of Progress Report of

Name and number of Division.	Name of Forest Tracts.	Year of Survey.	By whom Surveyed.	Number of Tracts surveyed.	TREES COUNTED IN								
					TEAK.					KANYEN.		THINWIN.	
					I.	II.	III.	IV.	Girdled.	Above 3 cubits.	Below 3 cubits.	Above 3 cubits.	Below 3 cubits.
	Brought forward ..				..	..	..	..	..	..	..	..	..
THARRAWADDIE.	*Mimboo.*												
	Dahmagnai ..	1874	Mr. E. P. Dansey, Assistant Conservator of Forests.	1	16	58	155	178	..	..	..	..	..
	Gaylin Choung ..			2	10	41	160	164	..	..	..	..	..
	TOTAL ..			..	26	99	315	342	..	..	..	..	..
	Boben.												
	Shwe Ngay Tay, } (information ..			3	94	24	39	17	..	..	..	..	..
	Pan Ay Tay } incomplete) ..			4	60	46	44	70	..	..	..	..	..
	TOTAL ..			..	154	70	83	87	..	..	..	..	..
	Mokkah.												
	Zanoong Choung ..			5	99	50	161	97	..	..	..	..	..
	Kyoukpyet Choung ..			6	24	59	183	71	..	..	..	..	..
	TOTAL THARRAWADDIE ..			..	123	109	349	168	..	..	..	..	..
WESTERN.	WESTERN FORESTS.												
	Palashin District.												
	Akouktoung Forest ..		Mr. E. P. Popert, Assistant Conservator of Forests.	..	..	9	..	..	..	..	..	..	..
	Do. continued ..			..	..	...	..	..	..	..	..	..	..
	Kyouk-bong Forest ..			..	1	2	..	..	..	..	..	..	..
	Do. do. ..			..	..	7	..	..	..	..	..	..	..
	Betweeen Poh and Layma Choungs ..			..	..	8	..	..	..	..	..	..	..
	Do. do. do. ..			..	..	..	..	..	..	..	..	..	..
	Do. do. do. ..			..	..	11	..	..	..	..	..	..	..
	Kyoukbong continued ..			..	..	29	..	..	..	..	..	..	..
	TOTAL WESTERN FORESTS ..			..	1	61	..	..	..	..	..	..	..
SALWEEN.	*Attaran District.*												
	Pakaboh—Bogadaw Choung ..	Decr. 1873	Captain W. J. Seaton, Conservator of Forests, and Moung Poh O, Assistant Conservator of Forests.	1	1	2	28	30	3	..	..	..	..
	Do. do, ..			2	1	3	13	62	1	..	..	..	..
	Do. Bwet Choung ..			3	9	3	20	35	..	..	..	..	..
	Do. between Bogadaw and Bwet.			4	17	7	14	33	..	..	..	..	..
	Do. Upper Bwet Choung ..			5	14	26	73	110	..	..	..	..	..
	Do. do. Bogadaw ..			6	4	..	7	30	..	..	..	..	..
	Do. source Gyojar Toung ..			7	3	4	10	21	..	..	..	..	..
	Do. Shway Byee Choung ..			8	3	4	35	40	..	..	..	..	..
	Lower Pakaboh, east and west below Shway Byee Choung ..			9	27	21	60	170	..	..	..	..	..
	TOTAL ..			..	79	70	255	531	4	..	..	..	..
	UPPER HOUNDRAW DISTRICT.												
	West Houndraw.												
	From above the mouth of Teepor Kyeor Kay at Lampha Choung to Hatsayagee ..	1874	Moung Poh O, Assistant Conservator of Forests.	1	..	..	..	..	..	..	..	..	..
	Carried forward ..			..	..	..	..	..	..	..	..	..	..

I.—*(Continued.)*

BRITISH BURMA.

the number of teak trees and woods of other kinds counted from 1873 *to* 1874
Forest Administration. British Burma for 1873-74.

THE SURVEY TRACTS.												AREA SURVEYED.			Total of first three classes of teak trees on 100 acres.	NUMBER OF TREES ON 100 ACRES.				
PYNKADOE.		THINGAN.		THITNEE.		PYINMA.		CUTCH.		PADOUK.										
Above 3 cubits.	Below 3 cubits.	Above 3 cubits.	Below 3 cubits.	Above 3 cubits.	Below 3 cubits.	Above 3 cubits.	Below 3 cubits.	Above 3 cubits.	Below 3 cubits.	Above 3 cubits.	Below 3 cubits.	Length of Tract Surveyed.	Width.	Area in Acres.		Cutch.	Pynkadoe.	Padouk.	Thitkado.	Thitka.
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	...	..	..	..	..	..
93	..	..	..	..	..	..	..	468	..	..	..	4,700	200	21·5	1,150	2,340	465	..	..	..
7	..	..	..	..	..	..	..	..	..	..	..	3,900	..	18·5	1,170	..	42	..	..	..
100	..	..	..	..	..	..	..	...	468	..	..	..	8,600	200	39·5	1,100	1,170	250	..	..	..
197	..	..	..	..	..	..	...	..	..	..	..	..	10,870	..	50·	314	..	394	..	..	..
193	..	..	..	..	..	..	..	..	..	..	..	..	9,760	..	44·	340	..	424	..	..	..
390	..	..	..	..	..	..	..	..	...	..	..	..	20,630	..	94·	327	..	409	..	..	..
178	..	..	..	..	..	..	..	..	..	..	..	..	14,800	..	67·75	457	..	462	..	..	..
142	..	..	..	..	..	..	..	..	..	..	..	..	10,560	..	48·5	557	..	290	..	..	..
320	..	..	..	..	..	..	..	..	..	..	..	..	25,360	..	116·25	500	..	279	..	..	..
43	..	..	..	..	..	..	..	..	195	..	..	..	13,700	80	25·2	85	774	170	..	..	..
31	..	..	..	..	..	..	..	..	55	..	..	..	9,200	100	21·0	..	231	148	..	..	..
34	..	..	..	..	..	..	..	..	492	..	..	..	10,600	..	24·3	12	2,024	140	..	..	..
110	..	..	..	..	..	..	..	...	238	..	..	..	18,500	..	42·4	16	561	259	..	..	..
..	..	..	..	..	..	..	..	..	474	..	..	..	15,800	..	36·3	8	1,330	..	..	..	..
..	..	..	..	..	..	..	..	..	354	..	..	..	12,200	..	27·9	..	1,268	..	..	..	..
28	..	..	..	..	..	..	..	..	187	..	..	..	12,800	..	29·4	36	635	95	..	..	..
35	..	..	..	..	..	..	..	..	119	..	..	...	17,800	..	40·8	72	297	86	..	..	..
281	..	..	..	..	..	..	..	..	2,114	..	..	..	110,600	..	247·3	24	845	112	..	..	..
..	..	..	..	..	..	..	..	..	..	1	..	3,400	100	..	...	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	3	..	5,500	100	..	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	3	..	9,700	100	..	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	1	..	4,900	100	..	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	..	..	7,400	100	..	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	3	..	1,800	100	..	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	..	..	3,900	100	..	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	1	..	13,400	100	..	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	10	..	24,200	100	...	..	..	..	..	..	...
..	..	..	..	..	..	..	..	..	..	27	..	79,200	..	181·58	222	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	5	10	8,500	100	19·51	..	..	..	...	..	..
..	..	..	..	..	..	..	..	..	..	5	10	8,500	10 0	19·51	..	..	..	..	..	..

STATEMENT

FOREST DEPARTMENT,

Extract from the Forest Day Books of the Forest Department, British Burma, showing being a continuation of Statement I of Progress Report of

Name and number of Division.	Name of Forest Tracts.	Year of Survey.	By whom Surveyed.	Number of Tracts surveyed.	TREES COUNTED IN								
					TEAK.					THITKADOE.		THITKA.	
					I.	II.	III.	IV.	Girdled.	Above 3 cubits.	Below 3 cubits.	Above 3 cubits.	Below 3 cubits.
	Brought forward ..				..	..	..	..	..	..	..	..	..
SALWEEN.—(*Continued.*)	[UPPER HOUNDRAW DISTRICT. *West Houndraw.*—(Continued.)												
	From opposite Hatsayeagee on the west bank of Houndraw to the north of Lampha ..	1874	Moung Poh O, Assistant Conservator of Forests.	2	..	..	..	..	..	1	..	..	..
	From the mouth of Lampha Choung, up along its west bank above the mouth of Teepor Kyeor Kai Choung ..			3	..	..	..	..	..	2	..	..	..
	From above the mouth of Teepor Kyeor Kai, along the left bank of Lampha Choung to Tieng-thorka hill ..			4	..	..	..	..	..	..	..	..	..
	From the mouth of the source of Teepor Kyeor Kai ..			5	..	..	..	..	..	4	10	7	..
	From Khameing Oung-toung to Khwaheing-toung ..			6	..	..	..	..	..	1	..	..	..
	From Khameing Oung-toung to Lampha Choung-biar ..			7	..	..	..	..	..	4	26	..	..
	A patch of teak on the left bank of Taylay Choung near Wingadoung ..			8	7	1	1	2	..	..	..	..	..
	Ditto ditto ditto ..			9	6	11	7	..	..	..	..	..	..
	From camp Wingadoung to Taylaykoke hill and back to camp ..			10	..	..	..	..	..	36	15	..	..
	From camp north east to south to a small Choungbiar about 4 miles below, to its mouth ..			11	..	..	..	..	..	48	5	6	..
	Survey on the left bank of Taylay from camp downwards ..			12	..	..	..	..	..	20	10	..	..
	From Tay Lay or Win Kghadoung to Tay Loh Choung ..			13	..	..	..	..	..	29	7	..	..
	From junction with Tayloh and Houndraw to Salan Choung ..			14	..	..	..	..	..	1	..	..	..
	On the west bank of Houndraw to Patong Kra Choung from the mouth of Hteemaw Choung ...			15	..	..	..	..	..	..	..	15	..
	East Houndraw.												
	From Longkanai Choung to Meethroung			16	..	..	..	..	..	..	..	..	..
	From Meenanda to Meethalong ..			17	..	..	..	..	..	12	16	..	..
	From Kyoon Choung to Meethalong ..			18	..	..	..	..	..	..	..	..	..
	On the west bank of Houndraw from Padoungkra to Lampha Choung ..			19	..	..	..	..	..	11	..	..	..
	From Teepotaplong to Teepowatagoung ..			20	..	..	..	..	..	..	..	..	..
	TOTAL OF SALWEEN ..			..	13	12	8	2	..	169	89	28	..

1.

BRITISH BURMA.

the number of teak trees and trees of other kinds counted from 1873 *to* 1874
Forest Administration, British Burma, for 1873-74.

THE SURVEY TRACTS.												AREA SURVEYED.			Total of first three classes teak trees on 100 acres.	NUMBER OF TREES ON 100 ACRES.				
PYNKADOE.		THINGAN.		THITNEE.		PYIMMA.		CUTCH.		PADOUK.										
Above 3 cubits.	Below 3 cubits	Above 3 cubits.	Below 3 cubits.	Above 3 cubits.	Below 3 cubits.	Above 3 cubits.	Below 3 cubits.	Above 3 cubits.	Below 3 cubits.	Above 3 cubits.	Below 3 cubits.	Length of Tract Surveyed.	Width.	Area in Acres.		Cutch.	Pynkadoe.	Padouk.	Thitkado.	Thitka.
..	..	..	..	..	..	..	..	..	..	5	10	8,500	100	19·51	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	8	7	11,600	100	26·62	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	2	..	12,600	..	28·92	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	10	8	23,000	..	52·77	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	6	2	23,000	..	52·77	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	1	..	16,000	..	36·68	..	..	..	..	..	..
..	..	9	23	..	..	..	..	..	..	..	..	33,000	..	75·75	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	..	..	500	..	1·14	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	..	..	500	..	1·14	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	6	..	33,000	..	75·75	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	5	13	30,000	..	68·87	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	5	6	26,000	..	59·68	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	14	..	39,000	..	89·58	..	..	..	..	..	..
..	..	1	..	..	..	..	..	..	..	..	..	18,000	..	41·31	..	..	..	..	..	..
..	..	20	..	..	..	..	..	..	..	..	..	30,000	..	68·87	..	..	..	..	..	..
..	..	11	..	..	..	..	..	..	..	..	..	16,000	..	36·68	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	..	..	18,000	..	41·31	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	3	..	7,000	..	16·06	..	..	..	..	..	..
..	..	31	..	..	..	..	..	..	..	..	..	30,000	..	68·87	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	7	..	6,000	..	13·77	..	..	..	..	..	..
..	..	72	23	..	..	..	..	..	..	72	46	..	..	..	..	..	..	..	..	..

STATEMENT

FOREST DEPARTMENT,

Extract from the Forest Day Books of the Forest Department, British Burma, showing being a continuation of Statement I of Progress Report of

Name and number of Division.	Name of Forest Tracts.	Year of Survey.	By whom Surveyed.	Number of Tracts Surveyed.	TREES COUNTED IN								
					TEAK.					THITKADOE.		THITKA.	
					I.	II.	III.	IV.	Girdled.	Above 3 cubits.	Below 3 cubits.	Above 3 cubits.	Below 3 cubits.
SITTANG.	YEANEE DISTRICT.												
	Hmankoo Forest, west of Hmankoo Choung, south of Myoung Thoong Wah village, which is immediately beyond the Frontier ..	1874	Mr. J. Adamson, Assistant Conservator of Forests.	1	177	47	19	58	..	..	..	..	..
	As in No. 1 ..			2	26	7	57	60	..	..	..	..	..
	Same as in No. 1 and 2 ..			3	260	46	60	59	..	..	..	..	..
	Hmankoo Forest east of Hmankoo Myoung Thoong Wah Choung, South of Myoung Thoong Wah village ..			4	53	20	113	127	..	..	..	..	..
	As in No. 4 ..			5	359	65	47	66	..	..	..	..	..
	Same as in No. 4 and 5 ..			6	270	63	89	171	..	..	..	..	..
	Hmankoo Forest West of Hmankoo Myoung Thoongwa ..			7	275	59	147	208	..	..	..	..	..
	TOTAL ..				1,420	307	532	749	..	..	..	..	..
	KOON DISTRICT.												
	North of Koon Choung West of Tsing Swayah Choung and East of Leitpoh Choung Tsingswayah Kyaw Forest ..			8	111	207	179	228	..	..	..	..	..
	Thingwin Kyaw Forest North of Koon Choung East of Tsingswayah Choung West of Myakeedenkalay Choung ..			9	44	61	67	36	..	..	..	..	..
	Kyoukmyoung Kyaw Forest South of Koon Choung, East of Choung Nyee Noung West of Myakyeedon Kyee Choung ..			10	53	91	91	71	..	..	..	..	..
	Daylan Forest East between the Daylan Choung on the East and to the West of the Choung Nyee Noung ..			11	41	44	29	40	..	..	..	..	..
	Daylan Forest West, South of Koon Choung West of Daylan Choung ..			12	89	180	83	51	..	..	..	..	..
	Daylan Forest East, East of Daylan Choung South of Koon Choung ..			13	62	109	86	23	..	..	..	..	..
	Daylan Forest East, East of Daylan Choung South of Koon Choung ..			14	5	5	43	40	..	..	..	..	..
	TOTAL OF SITTANG ..			..	405	697	578	489	..	...	..	..	..

I

BRITISH BURMA.

the number of teak trees and trees of other kinds counted from 1873 *to* 1874
Forest Administration, British Burma, for 1873-74.

THE SURVEY TRACTS.												AREA SURVEYED.			Total of first three classes teak trees on 100 acres.	NUMBER OF TREES ON 100 ACRES.				
PYNKADOE.		THINGAN.		THITNEE.		PYIMMA.		CUTCH.		PADOUK.										
Above 3 cubits.	Below 3 cubits.	Above 3 cubits.	Below 3 cubits.	Above 3 cubits.	Below 3 cubits.	Above 3 cubits.	Below 3 cubits.	Above 3 cubits.	Below 3 cubits.	Above 3 cubits.	Below 3 cubits.	Length of Tract Surveyed.	Width.	Area in Acres.		Cutch.	Pynkadoe.	Padouk.	Thitkadoe.	Thitka.
..	..	..	..	..	..	..	..	..	..	..	..	4,300	100	9·87	2,462	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	..	..	2,100	..	4·82	1,867	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	..	..	4,200	..	9·64	3,796	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	..	..	6,000	..	13·77	1,350	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	..	..	6,400	..	12·16	3,552	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	..	..	5,300	..	12·16	3,552	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	..	..	9,500	..	21·9	2,196	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	..	..	15,900	200	73·0	680	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	..	..	4,800	..	22·0	781	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	..	..	7,200	..	33·0	712	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	..	..	5,200	..	23·8	479	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	..	..	7,800	..	35·8	983	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	..	..	7,800	..	33·8	763	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	..	..	3,600	..	16·5	321	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

Statement IA.

FOREST DEPARTMENT, BRITISH BURMA.

Extract from the Forest Day Book of Mr. of F. Y. Elsner, Assistant Conservator of Forests, showing the results of his valuation Surveys in the Thingan producing Tracts of the Mergui and Tavoy Districts of the Tenasserim Division in 1873-74.

Name of Forest Tracts.	Number of Survey.	Area Surveyed.			Thingan trees counted.								Per acre.	
		Width.	Length.	Acres.	5 cubits.	4 cubits.	3 cubits.	2 cubits.	1 cubit.	Small trees.	Stumps.	Felled trees.	5 cubits.	4 cubits.
Zemba Choung, feeder of the Tavoy River														
Maykay Choung														
Above the Kadin right bank ..	4	100	3,500	8·05	20	14	25	56	18	507	18	9	2·54	1·73
Ditto left bank ..	5	,,	3,700	8·51	13	18	9	20	..	50	5	4	1·52	2·11
Between Maykay and Meetkada choung ..	6	,,	3,400	7·82	11	20	14	27	7	458	12	3	1·40	2·55
From Gna Goontee to Shoay-twin and upwards left bank ..	9	,,	5,700	13·11	17	32	52	26	4	26	31	20	1·29	2·44
Ditto ditto right bank ..	10	,,	2,700	6·21	14	21	39	31	..	..	15	9	2·25	3·38
Ditto ditto ditto ..	..	,,	3,400	7·82	8	6	15	102	110	190	2	1	1·02	0·77
Ditto ditto ditto ..	..	,,	1,900	4·37	1	..	4	22	9	185	1	..	0·23	..
Ditto ditto ditto ..	..	,,	1,200	2·76	2	1	9	24	6	..	9	5	0·72	0·36
Between Gna Goontee and Nataik choung East (right) bank ..	11	,,	1,500	34·50	33	41	130	185	105	{500 clusters 700 do. 90 separately 207 clusters				
										1,497	35	13	0·95	1·10
Between Nataik and Kwaylamay choung ..	12	,,	1,900	4·37	10	9	26	31	10	57	11	12	2·29	2·06
From Kwaylamay choung down the east bank of Zemba choung ..	..	,,	2,200	5·06	7	20	33	19	5	31	10	9	1·38	3·97
Right (north) bank of Kwaylamay choung ..	13	,,	8,200	18·86	11	36	58	65	42	50	25	20	0·58	1·95
Left (south) bank of ditto ..	14	,,	10,500	24·15	5	21	76	102	83	75	24	15	0·20	0·87
Between Kwaylamay and Gna Goontee choung on the left (western) bank of Zemba choung	15	,,	11,200	25·76	43	61	70	66	25	256	31	19	1·67	2·37
Between Kwaylamay and Mozan choung, both sides of Zemba choung ..	18	,,	5,400	12·42	10	56	73	116	76	320	23	9	0·80	4·50
From Mozan choung down to Zemba choung, both sides ..	19	,,	6,300	14·79	20	28	59	114	62	180	20	12	1·35	1·89
Right bank of Gan choung from camp upwards	22	,,	1,800	4·14	7	15	17	15	4	..	29	..	1·70	3·62
Both banks of ditto ditto ..	23	,,	1,200	2·76	11	17	30	51	28	110	30	7	3·66	5·66
					243	416	739	1,072	594	3,992	331	167	..	..
Tavoy Choung														
Continuation of No. 23 both sides of Gan choung upwards to Yaypoke to Choungpoke ..	24	100	15,300	35·19	102	46	194	245	167	342	43	30	2·90	1·30
From end of No. 23 up the Nyoungmayhlaynok choung both sides ..	26	,,	6,300	14·49	48	68	95	102	13	79	41	..	3·31	4·69
From the Western end of No. 22 down the Gan choung both sides ..	28	,,	10,100	23·23	50	78	81	290	160	580	52	21	2·15	3·35
On Gnantayok choung east of Moulmein Road	31	,,	3,000	6·09	3	5	4	..	..	..	..	..	0·43	0·72
On the Htsinsway choung above village of Htsinsway ..	32	,,	6,400	14·72	40	34	21	5	..	245	6	6	2·72	2·30
Between Htsinsway and Tazan choungs ..	33	,,	10,200	23·46	3	2	2	1	2	..	..	..	0·12	0·09
Between Meentha and Nyoung choungs ..	34	,,	9,900	22·77	2	5	5	..	..	..	..	..	0·09	0·22
Between Nyoung and Thinganhla choungs ..	35	,,	2,300	5·29	8	11	4	5	..	9	7	..	1·51	2·08
Between Thinganhla and Thingankouk choungs	36	,,	2,900	6·67	4	6	3	2	2	..	3	..	0·60	0·90
BetweenThingankouk and Kamalaygway choungs	37	,,	9,400	21·62	5	7	4	1	..	..	..	..	..	..
South of Kamalaygway along the Moulmein Road ..	38	,,	1,200	2·76	3	7	4	2	1	2	2	..	1·09	2·54
On Engdayagee choung, North Branch ..	39	,,	19,000	43·07	44	69	113	99	85	274	92	11	1·00	1·57
Ditto Middle Branch ..	40	,,	16,000	36·08	34	51	240	216	117	312	84	19	0·92	1·39
Ongbenkwin choung	41	,,	9,000	20·70	27	32	52	71	39	99	29	12	1·35	1·60
Yaypouk choung	42	,,	22,600	51·91	41	52	81	76	57	160	35	9	0·80	1·20
Galay thwot choung	43	,,	31,200	71·76	59	74	98	69	92	98	20	3	0·82	1·03
Yeenyay choung	44	,,	12,700	29·21	28	37	57	49	71	105	23	5	0·96	1·30
Htsensat choung	45	,,	16,300	37·49	34	61	82	48	60	97	27	3	0·92	1·65
Upper Pra chonng	46	,,	19,000	43·70	39	48	63	57	72	150	22	..	0·90	1·09
Lower ditto	47	,,	13,500	31·05	14	37	87	66	58	97	34	7	0·45	1·20
Upper Pawah	48	,,	26,000	59·80	53	58	69	65	82	112	20	9	0·88	0·97
Lower ditto	49	,,	18,700	43·01	39	60	53	96	76	139	31	..	0·90	1·40
TOTAL ..					880	858	1,412	1,575	1,154	2,900	571	185	..	..

Statement IA.—(*Continued.*)

Name of Forest Tracts.	Number of Survey.	Area Surveyed.			Trees counted in Survey tracts 4 cubits and above in girth.														
		Length.	Width.	Area.	Pynmah.	Pynkadoe.	Karaway.	Magalay.	Koungmho.	Kanyin.	Yemaneh.	Nantayok.	Thitkadoe.	Kamoung.	Thitka.	Kyayzay.	Aneen.	Kadok.	Dagoo.	Hmantan.
Forests on headwaters of Tavoy River.																			
Zemba choung north ..	2	25,000	100	57·50	97	9	..	4	..	..	33	..	42	..	..	..	..	51	..	..
Ditto south ..	3	23,600	,,	54·28	16	42	..	..	..	..	18	129	..	14	..	..	..	92	3	4
Maykay choung ..	4	3,500	,,	8·05	17	2	..	13	..	..	14	12	..	..	..	..	3	..	..	..
Ditto ..	5	3,700	,,	8·51	20	5	..	..	..	..	17	13	..	9	..	..	..	..	2	..
Between Maykay and Meetkawa choungs..	6	3,400	,,	7·82	..	..	14	21	..	19	..	..	..	..	..	..	..	16	..	6
Between Maykay and Zenba choungs ..	7	36,700	,,	84·41	..	18	..	37	..	..	..	23	34	..	..	7	..	..	..	..
Ditto ditto ..	8	25,000	,,	57·50	..	9	18	46	..	37	20	..	..	..	..	..	..	..	..	..
Between Kwaylamay and Mayan choung ..	16	29,400	,,	67·62	..	..	36	..	30	49	23	..	..	..	26	10	..	..	13	3
West of Mayan choung ..	17	18,000	,,	41·40	..	4	29	39	23	..	22	..	23	..	..	..	..	29	..	..
Between Gatopah and Panzan choungs ..	20	26,800	,,	61·64	..	16	..	35	47	32	..	..	36	..	..	..	..	24	15	..
Between Panzan and Gan choungs ..	21	40,100	,,	92·23	54	21	19	..	..	36	..	..	..	5	28	..	12	28	11	18
Between source of Gan and Mayan choung ..	25	38,400	,,	88·32	..	24	12	62	35	30	29	..	49	..	..	..	..	..	..	10
Between Nyoungmayhlaynok and Gan choungs ..	27	7,000	,,	16·10	..	12	..	49	22	..	..	..	12	..	5	9	..	..	..	..
Middle Gan choung ..	22 & 24	22,700	,,	52·21	35	..	46	5	14	..	18	..	30	..	..	..	18	..	..	12
Lower ditto ..	28	10,100	,,	23·23	..	..	14	..	..	..	4	38	13	53	..	17	..	14	4	..
Ditto ditto ..	29	8,100	,,	18·63	..	2	3	..	12	..	11	..	..	39	6	..	..	22	..	..
Between Nyoungben choung and Western watershed ..	30	10,800	,,	24·84	92	15	..	..	13	15	..	..	23	25	..	21	6	..	5	7
TOTAL ..					331	179	191	311	196	218	204	215	262	145	65	64	39	276	53	60
Forests on Coast.																				
Engdayaya choung ..	39	27,000	100	62·10	..	27	19	..	17	29	12	36	..	14	22	..	..	..	10	12
Ditto ..	40	36,000	,,	82·30	..	12	72	..	..	..	..	77	..	7	19	..	39	..	..	3
Ongbenkwin choung ..	41	10,400	,,	23·92	..	20	12	29	20	3	25	..	..	4	..	48	10	..	4	..
Yaypok choung ..	42	22,600	,,	51·98	..	24	19	41	36	..	9	44	..	..	20	23	19	..	..	7
Galaythwot choung ..	43	31,200	,,	71·76	8	39	57	37	43	7	..	..	..	..	34	50	..	..	8	..
Yeenyay choung ..	44	12,700	,,	29·21	..	..	..	15	17	..	4	..	..	10	..	..	3	..	..	4
Htsensat choung ..	45	16.300	,,	37·49	..	17	..	3	18	..	8	33	..	..	..	13	..	..	..	..
Upper Pra choung ..	46	19,000	,,	43·70	32	10	31	11	9	9	..	..	..	..	..	33	..	..	..	..
Lower ditto ..	47	13,500	,,	31·05	45	..	13	..	..	..	..	26	..	..	11	..	15	..	..	..
Upper Pawah choung ..	48	26,000	,,	59·80	..	..	..	7	33	11	13	..	..	3	2	..	..	..	..	..
Lower ditto ..	49	18,700	,,	43·01	19	23	..	..	26	24	..	17	..	..	..	..	9	..	..	..
TOTAL ..					104	172	223	143	219	83	71	233	..	38	108	167	95	..	22	26
Lower Landspit.																				
North ..	50	29,000	100	66·70	34	49	38	41	19	39	..	..	..	..	..	..	..	..	..	9
South ..	51	20,600	,,	47·38	..	7	11	13	..	28	..	..	..	..	..	..	..	..	..	11
Ditto ..	52	25,000	,,	57·50	..	21	15	19	..	21	..	..	..	..	..	..	..	..	..	26
Ditto ..	53	26,300	,,	129·49	..	26	16	24	..	16	..	..	..	..	..	..	..	..	..	18
TOTAL ..					34	103	80	97	19	104	..	..	..	..	..	..	..	..	..	64

Statement

FOREST DEPARTMENT,

Statement of Teak trees girdled and

Name and Number of Section.	Name of Revising Officer.	Total.	Sub-District.
I.—RANGOON ..	WORK NOT FULLY REVISED ..	Oakkan ..	South of Hpa Tha Hai Choung .. .. ..
			North of Hpa Tha Hai .. .. ..
			North of Yainan Choung .. .. ..
			South of Pagan Choung .. .. ..
		Magayee ..	North of Tin Sin Choung .. .. ..
			North of Htoo kaw Choung .. .. ..
			South ditto .. .. ..
			Total Rangoon Division .. ..
II.—THARRAWADDIE	MR. E. P. DANSEY, ASSISTANT CONSERVATOR OF FORESTS ..	Mimboo ..	Kyoonbengan Choung .. .. ..
			Thayet Pailonglah .. .. ..
			Shway Pallah .. .. ..
			Thubbyay boungyee .. .. ..
			Soungwet .. ..
			Gayling .. ..
			Saikmootoung .. .. ..
	DITTO DITTO ..	Boben ..	Kyaing Choung (East and West) .. ..
			Gyoh Myoung Choung .. .. ..
			Nah baibyoo Choung .. .. ..
		Mokkah ..	Taleingthat (North) .. .. ..
			Ditto (South) .. .. ..
			Zanoon Choung (North) .. .. ..
	DITTO DITTO ..		Ditto (South) .. .. ..
			Zanoon Choung (North) .. .. ..
			Nway Gway Choung Bya .. .. ..
			Shoukben Choung (East and West) .. ..
			Total Tharrawaddie Division .. ..
III.—PROME ..	MR. A. L. HOUGH, ASSISTANT CONSERVATOR OF FORESTS ..	South Naweng ..	Tinwah Myoung North .. .. ..
			Yogya Myetyai and Nalin .. .. ..
			Gwaydouk Choung .. .. ..
			Myoungnet Choung .. .. ..
			Tsatpya Myoung .. .. ..
			Gan Choung .. .. ..
			Kyakeik Myoung .. .. ..
			Lorbong Choung .. .. ..
			Kyouk Choung, feeder of the Bamboung .. ..
			Thadot Myoung .. .. ..
			Ginyea Choung-wah .. .. ..
			Wahtatoon, feeder of the Ginyea Choung .. ..
			Kathit Myoung ditto .. .. ..
			Yeanan Myoung ditto .. .. ..
			Shoukpen Myoung ditto .. .. ..
			Thayet Choung, feeder of the Choung-byouk .. ..
			Okshit Myoung .. .. ..
			Leing Myoung .. .. ..
			Thapan Choung (Lower) .. .. ..
			Loothai Choung .. .. ..
	SUPERINTENDING OFFICER—		Tinwa Myoung (South) .. .. ..
			Set Setyo Choung .. .. ..
			Seingya Toung .. .. ..
	MR. J. K. HUME, ASSISTANT CONSERVATOR OF FORESTS ..	..	Thapagan Choung (Upper) .. .. ..
			Kyoukyee Myoung .. .. ..
			Ycatha Choung .. .. ..
			Oopanlanglay (East) .. .. ..
			Ditto (West) .. .. ..
			Total Prome Division .. ..
V.—SITTANG ..	MOUNG SHWAY YEA, FOREST RANGER ..	Koon ..	Ngayoung Engkyaw .. .. ..
	SUPERINTENDING OFFICER ..		Thetpouk .. ..
	MR. JAMES ADAMSON, ASSISTANT CONSERVATOR OF FORESTS ..		Tsinswayah Kyaw .. .. ..
			Thinwin Kyaw .. .. ..
			Thatkyee Kyaw .. .. ..
			Daylan (East and West) .. .. ..
			Kyouk Myoung Kyaw .. .. ..
			Seetpoke Kyaw .. .. ..
			Baulaw Kyaw .. .. ..
			Taulay .. ..
			Naykay Kyaw .. .. ..
			Baulay South Baulay Choung .. .. ..
			Total Sittang Division .. ..
VI.—SALWEEN ..	MOUNG POH OH, ASSISTANT CONSERVATOR OF FORESTS ..	Upper Thoungyeen ..	Kyoukat Choung .. .. ..
			Maighah Choung .. .. ..
			Ongkra Choung .. .. ..
			Ong Kraing Choung .. .. ..
			Paupee and Hoothai Choung .. .. ..
			Oo Hoo Choung .. .. ..
			Kanailay Choung .. .. ..
			Total Salween Division .. ..
			GRAND TOTAL .. ..

II.

BRITISH BURMA.

Forest work done in season 1873-74.

Trees girdled.	First class trees estimated.	Trees counted by Revising Officer.		Percentage of girdled trees counted.	Percentage of first class trees girdled.	Creepers cut.	Young teak cleared.	Other trees girdled.	No. of other kinds of trees cut down.	Remarks.
		Trees girdled.	First class trees.							
200 220 152 428 77 785 138	...	..	..	..	..	..	..	..	..	Work was carried out by Moung Tok Poh, Forest Ranger, no European Officer being available for the work of revision.
2,003	..	..	..	..	..	..	..	..	..	
99 95 314 94 121 81 196	..	218	183	21·3	47	..	..	..	..	897 ungirdled first class trees counted.
500 252 248	...	297	970	29·7	44·1	..	..	..	..	791 Ditto ditto.
184 98 223 162 23 111 202	..	603	1,084	60·3	51·1	..	..	...	...	1,032 Ditto ditto.
3,003	..	1,118	2,237	..	..	..	..	..	..	
18	..	18	..	..						
29	..	7	...	..						
33	..	17	..	..						
2	..	2	..	..						
8	...	4	..	..						
122	..	74	..	..						
7	...	..	..	..						
91	..	52	..	..						
40	..	33	..	..						
19	..	..	..	..						
10	..	..	..	...						
152	..	107	..	..						
48	..	38	} 22	..						
6	..	2								
66	..	57								
400	..	187	22	..						
9	..	7	..	..						
2	..	..	..	..						
24	..	17	} 16	..						
118	..	68								
23	...	17	} 11	..						
16	..	11								
59	..	..	..	..						
277	..	131	23	..						
39	..	23	} 17	..						
133	..	87								
82	..	26	5	..	..	..	..	..	..	1,050 trees outside line of proposed reserve.
167	..	41	5	..						
2,000	..	1,026	121	..	..	..	...	..	..	
79 26 816 154 214 186 102 374 351 32 98 38	..	206	405.	·10	33	2,711				
2,020	..	206	405	10	33	..	..	..	..	
400	..	400	..	..	150					
100	..	100	..	..	10					
150	..	..	..	..	14					
500	..	215	..	..	45	..	..	..	..	In addition, 1,000 Thingan trees have been girdled in the Middle and Lower Thoungyeen.
200	..	..	..	..	18					
500	..	500	..	..	79					
150	..	..	..	..	13					
2,000	..	1,215	..	..	329	..	..	..	..	
11,026	..	3,565	2,763	..	..	..	..	..	..	

Statement III.

FOREST DEPARTMENT, BRITISH BURMA.

Statement of Timber brought from the Forests in British Burma by Permit Holders in 1873-74.

Name and Number of Section	Name of Forest Districts.	Name and Residence of Permit holders.	Duration of Permit. From	Duration of Permit. To	Timber worked out. Logs.	Timber worked out. Tons.	Amount paid as purchase money for the timber.	Amount paid as fees for the issue of Forest Permits.	Remarks.
							Rs. A. P.	Rs. A. P.	
Prome East ..	Boolay Naweng	Messrs. Gladstone Wylie & Co. ..	1st Jan. 1868.	1st Dec. 1874.	1,071 1,723	.. ..	7,047 0 0 4,617 8 0	152 12 6 1,293 9 9.	
Prome West ..	Matoon Mamya Opho Padashin	Messrs. Bulloch Brothers & Co. ..	12th May 1862.	1st Dec. 1874.	2,044 1,935 359 560	.. ..	8,017 14 0 4,151 0 0 1,757 0 0 2,231 6 0	....	
	Shoaytenga Talaidan	Mr. J. Bretto	28th Feb. 1866.	1st Dec. 1874.	583	..	2,162 10 0	....	
	Mudday ..	Said Mortaza ..	30th Nov. 1872.	31st Dec. 1873.	725	..	2,039 2 0	....	
	Bassein ..	Shoay Lope ..	24th Mrch. 1868.	1st Dec. 1874.	906	..	2,588 12 0	....	
Rangoon ..	Kawleya Binedah Yainway	Burma Company Lmtd.	1st Dec. 1871.	30th Nov. 1874.	1,198	..	9,847 0 0	1,766 10 8	
		Total of the Irrawaddie Divison ..			11,104	8,217	44,459 4 0	3,218 0 11	
Sittang West	Swah ..	Bombay Burma Trading Corporation Limited	1st Decr. 1871,	1st Dec. 1874.	3,015	..	29,619 2 0	1,500 0 0	
	Hpyoo ..	Teen Cowrie ..	Cancelled.	..	41	..	299 10 0	....	
	Koon ..	Burma Company Ltd.	30th Nov. 1871.	30th Nov. 1874.	336	..	2,966 11 0	3,333 5 4	
Sittang, East ..	Doonzarit ..	Toklopah ..	Ditto ..	Ditto ..	127	..	99 15 0	66 10 4	
	Shwe-gyeen ..	Ditto ..	Ditto ..	Ditto ..	104	..	81 5 0	....	
	Moong ..	Saboouputty ..	Ditto ..	Ditto ..	421	..	2,905 10 0	....	
	Youkthawah ..	Burma Company Ltd.	Ditto ..	Ditto ..	207	..	1,253 10 0	....	
	Thoukyeaghat	Teen Cowrie ..	Cancelled ..	Ditto ..	41	..	834 4 0	....	
Sittang West ..	Eintoon Toonkhan	Burma Company Ltd.	1st Dec. 1871.	30th Nov. 1874.	241	..	1,358 11 0	766 10 8	
	Bymbyai ..	Cancelled ..	Cancelled ..	Cancelled ..	..	..	1,615 15 0	....	
Sittang East ..	Koonoung ..	Ditto ..	Ditto ..	Ditto ..	..	..	155 2 0	....	
	Kannee ..	Ditto ..	Ditto ..	Ditto ..	..	..	287 2 0	....	
	Padah ..	Ditto ..	Ditto ..	Ditto ..	..	..	230 9 0	....	
	Gwaithai ..	Ditto ..	Ditto ..	Ditto ..	..	..	1,162 9 0	....	
Sittang West	Samoh ..	Ditto ..	Ditto ..	Ditto ..	..	..	43 9 0	....	
	Khabouug ..	Ditto ..	Ditto ..	Ditto ..	..	..	554 9 0	....	
	Myolha ..	Ditto ..	Ditto ..	Ditto ..	..	..	554 12 0	....	
		Total of Sittang Division ..			4,533	4,533	44,583 1 0	5,666 10 4	
Upper Salween	I Division ..	Moung Shway Oh ..	2nd Dec. 1871.	1st Dec. 1877.	331	..	2,365 6 0	....	
	II do. ..	Kharwai Htaw ..	Ditto ..	Ditto ..	1,002	...	8,757 12 0	....	
	III do. ..	Mr. C. O. Johnstone ..	Ditto ..	Ditto ..	39	..	819 2 0	....	
Salween ..	Yoonzaleen ..	Ditto ..	1st Jany. 1871.	31st Dec, 1873.	..	..	3,384 0 0	....	
Thoungyeen ..	Thoungyeen ..	Ko Sit Por ..	1st Feb. 1873.	1st Feb. 1874	2,488	..	*18,179 12 0	....	
Lower Salween	Meebong and Myaingalay.,	Moung Chain ..	15th May 1871,	14th May 1874.	2,200	..	1,185 0 0	....	
	Part of lower Salween ..	Syah Pah Poo ..	17th April 1871,	16th April 1874.	..	..	....	....	
	Kooloon Forest	Koh Tharooway ..	1st Dec, 1871.	30th Nov. 1874.	482	..	241 0 0	16 11 0	
	Hlinebway ..	Syah Pah Poo ..	2nd Dec. 1870.	do.	3,287	..	1,749 15 0	....	
Attaran ..	Mittigatte and Kyouktaga ..	Ramasawmy Rajah ..	1st Dec. 1871,	do,	206	..	....	†100 0 0	
Tracts Nos. of Attaran ..	19, 20 and 21 Nat choung.,	Moung Khine ..	5th Dec. 1872.	4th Dec. 1873.	470	..	351 0 0	....	
	20 and 21 Nat choung ..	Mr. D'Silva ..	8th Jany. 1874,	7th Jan. 1875.	..	..	....	7 8 0	
	23, 24 and 29 Goonglay choung ..	Moung Khine ..	5th Dec. 1873,	4th Dec. 1873.	..	..	....	....	
	23, 24 and 29 Goonglay choung ..	Mr. D'Silva ..	8th Jany. 1874.	7th Jany. 1875.	..	..	....	7 8 0	
	26, 31, 32, 36, 37, 38 and 39 Goungyee and Dalay choung	Ramasawmy Rajah ..	12th Jany. 1874.	11th Jan. 1875.	.	..	....	25 0 0	
	25 Danong choung ..	Mr. D'Silva ..	8th Jany. 1874.	7th Jan. 1875.	..	..	....	10 0 0	
		Total of Salween Division ..			10,555	8886·10	36,582 15 0	166 11 0	
		Add revenue collected on this timber at Kadoe ..			..	..	14,767 8 0	9,051 6 3	
		GRAND TOTAL ..			26,192	22001·14	1.40,342 12 0	....	

* Rs. 20,481-2-0 Revenue due on this timber will be collected in 1874-75.
† Rs. 1,554-6-0 ditto. ditto ditto

FORM No. 21.

Annual Summary of Revenue and Expenditure in the different Divisions during 1873-74.

Form No. 21.

FOREST DEPARTMENT, BRITISH BURMA.

Annual Summary of Revenue and Expenditure in the different Divisions during 1873-74.

Classification.	Rangoon.	Tharrawaddie.	Prome.	Total Irrawaddie Division.	Sittang Division.	Salween Division.	Kadoe Revenue Station.	Grand Total.
RECEIPTS.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.
I.—Sale of Timber at Depots.	4,68,649 4 5	69 8 0	...	4,68,718 12 5	10,939 8 0	46,168 13 0	...	5,25,827 1 5
II.—Sale of Timber removed by purchasers ...	9,847 0 0	...	34,612 4 0	44,459 4 0	44,583 1 0	36,532 15 0	14,767 8 0	1,40,342 12 0
III.—Duty on Foreign Timber...	...	...	...	...	...	...	1,91,400 7 0	1,91,400 7 0
IV.—Permit Fees ...	1,766 10 8	...	1,451 6 3	3,218 0 11	5,666 10 4	166 11 0	...	9,051 6 3
V.—Grazing Dues ...	...	...	...	...	...	...	...	...
VI.—Sale of Fruits, &c. ...	...	...	...	...	...	...	...	...
VII. Sale of confiscated drift or waif timber ...	2,761 0 0	10 0 0	13 0 0	2,784 0 0	1,56,733 4 0	...	27,111 8 0	1,86,628 12 0
VIII.—Fines and forfeitures ...	330 2 11	117 0 0	20 5 4	467 8 3	42 0 0	557 0 0	...	1,066 8 3
IX.—Miscellaneous receipts ...	3,318 8 0	959 4 9	198 0 0	4,475 12 9	2,071 6 0	674 1 0	7,083 4 0	14,304 7 9
Total Receipts ...	4,86,672 10 0	1,155 12 9	36,294 15 7	5,24,123 6 4	2,20,035 13 4	84,099 8 0	2,40,362 11 0	10,68,621 6 8

| EXPENDITURE. | | |

Form No. 22.

FOREST DEPARTMENT, BRITISH BURMA.

Annual Abstract Cash Account of the Cash Transactions of the Forest Department, British Burma, for the official year 1873-74.

Year.	Heads of Accounts.	Rupees.			Year.	Heads of Accounts.	Rupees.		
		RS.	A.	P.			RS.	A.	P.
1873-74.	To Cash Balance in hand on 1st April 1873	16,432	11	2	1873-74.	By Expenditure of the Department	4,75,421	10	8
	,, Revenue realized	10,68,621	6	8		,, Remittances of State Treasuries	10,13,151	2	3
	,, Income Tax	17	9	0		,, Ditto on account Public Works Department ...	29,457	15	2
	,, Remittances from State Treasuries	4,86,493	9	9		,, Ditto Cape of Good Hope, Government ...	34,078	0	0
	,, Ditto Uncovenanted Civil Pension Fund ...	484	6	0		,, Repayments of Deposits	11,896	3	8
	,, Ditto Military Fund	850	10	5		,, Advances Recoverable	70,623	10	3
	,, Deposits	15,992	4	7		,, Allowances Refunds and Drawbacks	112	14	...
	,, Advances Recoverable	62,051	13	4		,, Treasury Deposits	11,347	12	...
	,, Treasury Deposits	11,347	12	0		,, Profit and Loss, Cape of Good Hope Government ...	5	0	...
	,, Refunds	890	0	0		,, Cash Balance on 31st March 1874	19,800	0	1
	,, Political Agent, Bhamo	600	0	0					
	,, Public Works Department Bungalow Rent ...	11	0	0					
	,, Cape of Good Hope	5	0	0					
	,, Advances Recoverable, Bengal Government ...	2,096	1	2					
	GRAND TOTAL RUPEES ...	16,65,894	4	1		GRAND TOTAL RUPEES ...	16,65,894	4	1

Form No. 23.

FOREST DEPARTMENT—BRITISH BURMA.

Annual Statement of Outstandings and Liabilities of the Department on account of Contractors and Disbursers, 1873-74.

Names of Divisions.	Department Debtor.			Department Creditor.			Balances Due	
	At Commencement of the year	Recoveries in cash and value of supplies and work done during the year.	At close of the year.	At Commencement of the year.	Payments made during the year.	At close of the year.	To Department Outandings.	By Department Liabilities.
	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P	RS. A. P	RS. A. P.	RS. A. P.
Tharrawaddie	3,995 2 6	1,14,020 4 6	1,18,015 7 0	1,39,550 14 1	79,538 6 8	2,19,089 4 9	1,11,401 2 11	10,327 5 2
Rangoon	...	13,517 5 6	13,517 5 6	27,167 12 6	9,036 14 4	36,204 10 10	22,687 5 4	...
Prome	...	2,056 14 11	2,056 14 11	2,056 14 11	...	2,056 14 11	...	...
Sittang	...	1,059 11 2	1,059 11 2	1,059 11 2	14,264 11 0	15,324 6 2	14,264 11 0	...
Salween	...	24,817 5 0	24,817 5 0	410 0 0	24,407 5 0	24,817 5 0	...	...
Grand Total Rupees ...	3,995 2 6	1,55,471 9 1	1,59,466 11 7	1,70,245 4 8	1,27,247 5 0	2,97,492 9 8	1,48,353 3 3	10,327 5 2

Form

FOREST DEPARTMENT,

Statement of Timber brought from the Forests

Name of Divisions.	Name of Forest.		Round Logs.				
			Yatthits.	Lhwazars.	Doogies.	Yard and Mast pieces.	Crooks.
	Average cubical contents in cubic feet		(25)	(48)	(58)	(90)	(12)
Tharrawaddie ...	Beeling	... ...	54	697	763	4	...
	Mokkah	... ...	66	111	158	...	...
	Minhla	... ...	26	256	665	32	...
	Htoo	... ...	163	273	145	...	...
	Toung Choung	... ...	52	303	92	1	...
	Boben	... ...	28	1,016	833	12	...
	Mimboo	... ...	1	221	160	...	...
	Toungnyo	... ...	333	471	608	7	...
	Shaboung	... ...	4	277	262	1	...
	Shwaylay	... ...	52	389	198	5	...
	Padingben	... ...	...	6	1	...	...
	Gamoong	... ...	17	97	23	2	...
		Logs, Teak ...	796	4,117	3,908	64	...
		Tons, ditto ...	398·	3952·30	4533·40	115·20	...
Rangoon ...	Pegu ...	... ...	14	79	205	8	...
	Oakkan	... ...	15	193	99	...	...
	Zamayee	... ...	7	28	134	·4	...
	Thongzai	... ...	20	182	190	1	...
	Pounglin	... ...	13	25	8	...	...
	Maizalee	... ...	14	76	26	...	...
	Magayee	... ...	21	35	24	...	...
		Logs, Teak ...	104	618	686	13	...
		Tons, ditto ...	52·	593·30	795·80	23·4	...
Sittang. ...	Gwaithai	... ...	326	696	5,984	3	...
	Kannee	... ...					
	Myolha	... ...					
	Bymbyai	... ...					
	Samoh	... ...					
	Thoukyeaghat	... ...					
	Shwaygyeen	... ...					
		Logs, Teak ...	326	696	5,984	3	...
		Tons, ditto ...	163·	668·	6941·44	5·4	...

No. 24.

BRITISH BURMA.

by Contractors and Government Agency, 1873-74.

Square Logs.			Small pieces.	Logs.	Tons.	Remarks.
Squares	Planks and Shinbyns.	Sleepers.				
(40)	(8)	(3·5)	(7)			
3	...	...	...	1,521	1590·8	
1	...	...	...	336	323·68	
2	...	...	...	981	1089·35	
1	...	...	...	582	512·58	
...	...	...	...	448	425·40	
...	...	...	...	1,889	1977·25	
...	...	...	...	382	398·28	
...	...	...	...	1,419	1336·56	
...	...	...	...	544	573·64	
...	...	...	...	644	638·14	
...	...	...	...	7	6·92	
...	...	...	...	139	131·90	
7	...	...	...	8,892	...	
5·60	...	...	...	...	9004·50	
...	...	...	1	307	335·18	
...	...	...	4	311	308·18	
...	...	...	...	173	193·04	
...	...	...	1	394	407·08	
...	...	...	2	48	40·08	
...	...	...	3	119	110·54	
...	...	...	...	80	71·94	
...	...	...	11	1,432	...	
...	...	...	1·54	...	1466·04	
3	...	...	...	1,744 1,133 1,489 1,378 81 841 346	... ...	
3	...	...	...	7,012	...	
2·4	...	...	...	...	7780·24	

Form

FOREST DEPARTMENT,

Statement of Timber brought from the Forests

Name of Divisions.	Name of Forests.	Round Logs.				
		Yatthits.	Lhwazars.	Doogies.	Yard and Mast pieces.	Crooks.
Salween ...	Beeling Teak	32	23	25	...	...
	Yoonzaleen Ditto	98	91	80	...	...
	Logs ...	130	114	105	...	...
	Tons ...	65·	109·44	121·8	...	...
	Obtained from various sources.					
	Drift Teak Timber — Irrawaddy Division ...	49	165	51	...	3
	Drift Teak Timber — Sittang „ ...	284	603	790	...	...
	Drift Teak Timber — Salween „ ...	386	704	845	1	...
	Sittang — Thitka and Thitkadoe	...	1,606	...	...	...
	Salween — „ „ ...	...	*1,580	...	...	...
	Tharrawaddie Kulamet	...	3	...	...	...
	Logs ...	719	4,661	1,686	1	3
	Tons ...	359·5	5873·72	1959·76	1·8	·72
	Logs ...	2,075	10,206	12,369	81	3
	Tons ...	1037·5	11196·76	14352·20	145·80	·72

No. 24.—*(Continued.)*

BRITISH BURMA.

by Contractors and Government Agency, **1873-74.**

Square Logs.			Small pieces.	Logs.	Tons.	Remarks.
Squares.	Planks and Shinbyns.	Sleepers.				
...	...	...	...	80	67·08	
...	...	...	...	269	229·16	
...	...	...	...	349	...	
...	...	...	...	...	296·24	
5	70	...	42	385	263·86	
8	...	...	...	1,685	1643·68	
22	...	...	...	1,958	1868·44	
...	...	(1·5)	...	1,606	2248·4	
...	...	†100	...	1,680	2215·00	*Average cubical contents (70.)
...	...	...	...	3	4·2	†Thingan wood.
35	70	100	42	7,317	...	
28·	11·2	3·	5·88	...	8243·58	
45	70	100	53	25,002	...	
36·00	11·2	3·	7·42	...	26790·60	

Form No. 25.

FOREST DEPARTMENT, BRITISH BURMA.

Statement of Timber received and disposed of from the Forests in British Burma, by the Forest Department from, 1st April 1873 to 31st March 1874.

Particulars.	No.	Total.	Particulars.	No.	Total.
Number of Logs in hand on 31st March 1874	...	62,789	Number of Logs sold in 1873-74 as per Form No. 26 ...	19,743	19,743
Number of Logs brought from the Forests by Contractors and Government Agency—			„ Logs sold to Permit Holders in 1873-74 ...	26,192	26,192
			Drift timber delivered to claimants on proof of ownership ...	2,394	2,394
Logs, Teak	17,685		Number of Logs expended for Government purposes ...	26	26
Drift timber collected at Depots	4,028		„ Logs lost or perished during the year ...	187	187
Woods of other kinds	3,189		*Kadoe Revenue Station.*		
Sleeepers, Thingan	100		„ Logs cleared at Kadoe on payment of duty in 1873-74	89,427	89,427
Total as exhibited in Form No. 24 ...	...	25,002			
Number of Teak Logs brought from the Forests by Permit Holders			By balance on 31st March 1874 ...	...	64,061
Prome East and West	9,906				
Rangoon	1,198				
Sittang	4,533				
Salween...	10,555				
Total as exhibited in Statement III ...	...	26,192			
Kadoe Revenue Station.					
Number of Logs registered for duty in 1873-74... ...	...	88,047			
TOTAL NUMBER OF LOGS ...	...	202,030	TOTAL NUMBER OF LOGS ...	...	202,030

Form No. 26.

FOREST DEPARTMENT, BRITISH BURMA.

Statement shewing the amount realized on account of different classes of Timber received on Government account and sold during 1873-74.

Particulars.		Number of logs.	Cubical contents.	Amount realized.			Average amount realized per log.			Average cubical contents per log.	Average amount realized per ton.		
				RS.	A.	P.	RS.	A.	P.		RS.	A.	P.
ROUND LOGS, TEAK ...	Yatthits	1,658	43,108	26,217	2	...	15	13	...	26	30	6	6
	Lhwazars	6,041	332,255	2,37,169	4	...	39	4	...	55	35	10	10
	Doogies	4,520	325,440	2,01,310	10	9	44	8	7	72	30	10	2
	Yard mast and stem pieces ...	97	10,670	10,291	7	8	106	1	6	110	48	3	7
SQUARES AND SMALL PIECES ...	Doos Doodoos and Thokes ...	...	...	...	...	...	...	...	...	...	...	...	...
	Crooks	8	40	64	...	...	8	...	...	5	80	...	...
	Small pieces	24	168	64	8	...	2	11	...	7	19	3	4
	Woods of other kinds ...	2,177	152,390	50,207	1	...	23	1	...	70	16	7	4
	Total Logs ...	14,525	864,071	5,25,324	1	5	36	2	8	59	30	6	4
SLEEPERS	Teak	...	...	...	...	...	...	...	...	...	...	...	...
	Thingan	...	...	...	...	...	...	...	...	...	...	...	...
	Pynkadoe	251	502	503	...	...	2	...	...	2	50	1	7
	Confiscated drift and waif wood ...	4,967	392,383	1,85,316	12	...	37	5	0	79	23	4	0
	GRAND TOTAL ...	19,743	1,256,956	7,11,143	13	5	36	0	4	63	28	4	7
	Realized under Head I of Revenue										525,327	1	5
	Ditto Ditto VII Ditto										186,628	12	...
	Deduct on account of sale No. 8 of 1872-73 realized in 1873-74, including timber sold to Public Works Department										712,455	13	5
											1,312	...	...
	Add on account of sales of 1873-74 to be realized in 1874-75 ...										711,143	13	5
	Total sales of 1873-74 ...										711,143	13	5

FORM No. 27.

FOREST DEPARTMENT, BRITISH BURMA.

Statement shewing the amount expended on account of the different classes of Timber received on Government account during 1873-74.

Particulars.	No. of logs.	Cubical contents.	Amount paid to Contractors.	Average amount paid per log.	Average cubical contents per log.	Average amount per ton.	Remarks.
			Rs. A. P.	Rs. A. P.		Rs. A. P.	
Round Logs Teak ... Yatthits	1,356	33,900	6,662 4 0	4 14 7	25	9 13 0	
Round Logs Teak ... Lhwazars	5,545	266,160	38,919 5 2	7 0 3	48	7 4 11	
Round Logs Teak ... Doogies	10,683	619,614	1,40,876 8 4	13 3 0	58	11 5 10	
Round Logs Teak ... Yard, Mast, keel pieces and Sleepers.	80	7,200	1,885 0 0	23 9 0	90	13 1 5	
Squares Teak. Squares	10	400	158 12 0	15 14 0	40	19 13 0	
Squares Teak. Shinbyns and planks ...	...	...	...	...	...	...	
Small Pieces Teak ... Crooks	...	...	...	...	...	...	
Small Pieces Teak ... Small pieces	11	77	15 13 0	1 7 0	7	10 4 0	
Total brought out by Contractors ...	17,685	927,351	1,88,517 10 6	10 10 6	...	10 2 7	
Thingan Sleepers from Salween Division...	100	150	250 0 0	2 8 0	1·5	83 5 4	Includes freight by sea.
Drift Timber by Government Agency ...	4,028	188,799	17,291 12 8	4 4 8	...	4 9 3	
Woods of other kinds	3,189	223,230	32,359 10 0	10 2 4	...	7 3 11	
Total paid for year's out-turn ...	25,002	1,339,530	2,38,419 1 2	9 8 7	...	8 14 4	

Add expenditure incurred in 1872-73 to acccount of operations in 1873-74, iuclusive of timber neaped in the Meimakha	...	...	12,580 0 0	0 8 0	...	0 7 6
Add cost of administration, direction and other expenditure chargeable on timber brought to Depots	...	...	1,28,724 4 1	5 2 4	...	4 12 10
I.—Total expenditure on Government timber of season 1873-74	...	...	3,79,723 5 3	15 3 0	...	14 2 9
Deduct expenditure of 1872-73 included above, to exhibit actual cost of timber	...	...	12,580 0 0	...	...	...
II.—Ditto chargeable to 26,192 logs of Permit timber	...	...	3,67,143 5 3 71,099 12 5	...	...	...
III.—Ditto chargeable to Kadoe Timber Revenue Station	...	...	10,852 14 0	...	...	...
IV.—Amount of part payments in 1873-74, to account of timber operations in 1874-75 ...	...	...	25,435 11 0	...	...	...
Total expenditure of the Department on account of this year	...	...	4,74,531 10 8	...	...	...

Form No. 28.

FOREST DEPARTMENT, BRITISH BURMA.

Annual account of Forest Revenue for 1873-74.

Receipts.				Disbursements.			
	RS.	A.	P.	RS.	A.	P.	
Amount of Revenue realized in 1873-74 ...	10,68,621	6	8				
Deduct.				*Deduct.*			
Amount realized on account of previous periods *	19,491	12	0	Amount disbursed on account of 1874-75 ...	25,435	11	0
Balance ...	...			10,49,129	10	8	Balance			4,49,095	15	8
Add.				*Add.*			
Outstandings on account of year † ...	...			28,035	8	0	Amouut disbursed in 1872-73 on account of 1873-74	12,580	0	0	...		
Value of the year's transactions ...	...			10,77,165	2	8	Amount due for transactions during the year under review but not yet disbursed ...	10,327	5	2	22,907	5	2
							Cost of the year's transactions ...	...			4,72,003	4	10

	RS.	A.	P.
* Outstandings of sale 8	1,312	0	0
SalweenDivision	18,179	12	0
	19,491	12	0
† Salween Division	26,481	2	0
	1,554	6	0
	28,035	8	0

	RS.	A.	P.
Value of the year's transactions	10,77,165	2	8
Cost of the year's transactions	4,72,003	4	10
	6,05,161	13	10
Add difference between the value of stock at the commencement and close of the year ...	2,53,251	4	0
Net result of the year	8,58,413	1	10

Appendix A.

Comparative Statement shewing the burdens which Foreign and British Timber have to bear before they reach a Port of Shipment.

Division and Nature of Charges.	Charges.	Royalty.	Import.	Export.	Total.	Remarks.
FOREIGN.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	
Karennee and Shan States.						
Price paid for logs launched into the water including Royalty to Chief, Rs. 10 to 35 according to quality; average, say	22 8 0					
Rafting charges from Kyodan to Kadoe, per log	4 0 0					
Import duty at Kadoe per log ...	...	...	2 12 0			
Cost per log of ordinary good timber, laid down in Moulmein ...	...		...	...	29 4 0	Average contents per log—50 cubic feet.
Ningyan Forest.						
Royalty to the King of Burma depending upon special agreement and according to quality of logs, but say for an ordinary doogie of good quality	...	8 0 0				
Expenses of felling, dragging and launching per log, say ...	15 0 0					
Rafting charges from Ningyan to Toungoo per log, say... ...	2 8 0					
Rafting charges from Toungoo to Rangoon per log, say... ...	3 12 0					
Cost per log of ordinary doogies of good quality laid down in Rangoon	...	...	...	...	29 4 0	Do. do. 50 cubic ft.
Mandalay Forests.						
Royalty to the King depending upon special arrangement, and according to quality of logs, but say for ordinary doogies of good quality ...	...	7 0 0				
Expenses of felling, dragging and launching per log, say ...	15 0 0					
Rafting charges from Ava to Rangoon per log	3 0 0					
Cost per log of an ordinary doogie laid down in Rangoon ...	...	...	...	...	25 0 0	Do. do. 37 cubic ft.
British.						
Prome Permit Timber	20 0 0	7 0 0	...	...	27 0 0	
Sittang do.	20 0 0	7 0 0	...	...	27 0 0	
Salween do.	18 0 0	7 0 0				
		2 12 0		at Kadoe.	27 12 0	
Tharrawaddie worked by Government Contractors	15 0 0	...	...	...	15 0 0	

Appendix B.

Statement exhibiting cost of feed and keep of Elephants of the Forest Department, British Burma, for the official year 1873-74, *as compared with that of the Commissariat Department for the same period.*

Division.	Number of Elephants kept.	Total cost of feed for the year.	Total cost of keep for the year.	Amount paid for medicines.	Amount paid for gear.	Total expenditure per annum.	Average cost for each animal per annum.	Average cost of a Commissariat Elephant for 1873-74.	Average cost per animal of the Forest Department per mensem	Average cost per animal of the Commissariat Department per mensem.	Value of labor in cash receipts and work performed.
		RS. A. P.	RS A. A.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.
Rangoon ...	8	1,711 6 6	2,244 9 0	81 13 6	278 10 0	4,316 7 0	539 8 10	487 3 0	44 15 4	40 9 7	5,082 10 0
Prome ...	4	181 0 0	1,257 0 3	4 12 0	22 6 0	1,465 2 3	366 4 7		30 8 4		1,572 0 0
Sittang ...	2	199 12 6	624 2 0	9 8 0	31 4 0	864 10 6	432 5 3		36 0 5		656 0 0
Tharrawaddie ...	11	3,289 9 6	1,372 15 4	136 13 2	372 8 0	5,171 14 0	470 2 8		39 2 10		4,101 4 0
TOTAL ...	25	5,381 12 6	5,498 10 7	232 14 8	704 12 0	11,818 1 9	472 11 7		39 6 3		11,411 14 0

Appendix C.

(Being a continuation of Appendix D of last year).

ving expenditure incurred on account of Teak Plantations in British Burma up to close of official year 1873-74.

During 1873-74.									Average Cost per Acre During 1873-74.							
lanted 0-71.	On area planted in 1871-72.	On area planted in 1872-73.	Cost of formation in 1873-74.	Total cost of area planted.	Amount realized on crops prior to 1873-74.	Amount realized on crops in 1873-74.	Total amount realized on crops.	Total net cost of area planted, formation and maintenance including 1873-74.	Maintenance of area previously planted.	Maintenance of area planted in 1870-71.	Maintenance of area planted in 1871-72.	Maintenance of area planted in 1872-73.	Average cost per acre of formation and maintenance prior to 1873-74.	Average cost per acre for formation in 1873-74.	Average cost per acre for formation and maintenance on whole area planted.	Remarks.
s. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	
16 7 8	6,364 4 6	...	..	68,795 1 0	1,568 9 9	168 8 8	1,736 12 8	67,058 4 9	8 2 6	26 8 9	17 14 9	..	..	..	98 1 9	
..	..	3,692 8 8	12,067 4 0	25,807 13 9	..	113 8 0	113 8 0	25,694 5 9	..	..	..	26 0 0	38 11 8	56 10 5	72 6 0	
21 4 10	..	..	..	34,338 15 5	243 10 9	..	243 10 9	34,090 4 8	0 14 4	1 11 10	..	..	..	..	100 4 3	
..	..	..	..	15,394 11 5	..	..	..	15,394 11 5	2 14 6	..	..	..	..	..	106 14 6	
..	..	..	..	1,373 2 4	..	..	..	1,373 2 4	..	..	..	..	..	..	19 9 10	
19 10 0	..	..	678 12 0	22,053 5 0	1,027 6 0	69 6 0	1,096 12 0	20,956 9 0	0 7 0	1 1 3	..	..	..	18 7 7	30 2 7	
57 6 6	6,364 4 6	3,692 8 8	12,741 0 0	1,67,758 0 11	2,839 9 9	351 1 3	3,190 11 0	1,64,567 5 11	0 15 11	1 14 5	2 12 6	1 9 9	..	48 7 1	71 15 2	

In addition, the following area has been cleared and prepared in 1873-74

Magayee 206 acres

Appendix C.

(Being a continuation of Appendix D of last year).

Statement shewing expenditure incurred on account of Teak Plantations in British Burma up to close of official year 1873-74.

Area planted in 1873-74.	Total area planted.	Previous cost on area planted.	Cost During 1873-74.				Cost of formation in 1873-74.	Total cost of area planted.	Amount realized on crops prior to 1873-74.	Amount realized on crops in 1873-74.	Total amount realized on crops.	Total net cost of area planted formation and maintenance including 1873-74.	Average Cost per Acre During 1873-74.				Average cost per acre of formation and maintenance prior to 1873-74.
			On area planted piror to 1870-71.	On area planted in 1870-71.	On area planted in 1871-72.	On area planted in 1872-73.							Maintenance of area previously planted.	Maintenance of area planted in 1870-71.	Maintenance of area planted in 1871-72.	Maintenance of area planted in 1872-73.	
		Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.
..	683·5	57,045 10 0	1,468 10 10	3,916 7 8	6,364 4 6	...	..	68,795 1 0	1,568 9 6	168 8 8	1,736 12 3	67,058 4 9	8 2 6	26 8 9	17 14 9	..	..
213·	355·	10,043 6 1	..	..	..	3,692 3 8	12,067 4 0	25,807 13 9	..	113 8 0	113 8 0	25,694 5 9	..	..	..	26 0 0	38 11 8
..	340·	33,970 0 8	242 9 11	121 4 10	..	..	..	34,333 15 5	243 10 0	..	243 10 9	34,090 4 8	0 14 4	1 11 10	..	..	..
..	144·	14,976 15 7	418 11 10	..	..	..	..	15,394 11 5	..	..	..	15,394 11 5	2 14 6	..	..	..	..
..	70·	1,373 2 4	..	..	..	..	..	1,373 2 4	..	..	..	1,373 2 4	..	..	..	..	..
50.	694·76	20,907 1 0	152 14 0	319 10 0	..	..	678 12 0	22,053 5 0	1,027 6 0	69 6 0	1,096 12 0	20,956 9 0	0 7 0	1 1 8	..	..	..
263·	2287·26	1,38,320 8 8	2,282 14 7	4,357 6 6	6,364 4 6	3,692 3 8	12,741 0 0	1,67,758 0 11	2,839 9 9	351 1 8	3,190 11 0	1,64,567 5 11	0 15 11	1 14 5	2 12 6	1 9 9	..

In addition, the following area has been cleared and prepared in 1873-74

Magayee 206 acres

Appendix D

Area of Reserved Forests.

Reserved Forests.	Area in 1872-73.	Added during the year.	Excluded or transferred to other heads.	Total remaining in 1873-74.
	Square miles.	Square miles.	Square miles.	Square miles.
Rangoon	...	...	...	...
Tharrawaddie	79·46	10·97	...	90·43
Prome	29·17	137·5	...	166·67
Sittang	5·49	...	·012	5·478
Salween	20·18	...	3·43	16·75
TOTAL ...	134·30	148·47	3·442	279·328

Area of Unreserved Forests.

Unreserved Forests.	Area in 1872-73.	Added during the year.	Excluded or transferred to other heads.	Total remaining in 1873-74.
	Square miles.	Square miles.	Square miles.	Square miles.
Rangoon	400·	...	...	400·
Tharrawaddie	590·54	...	...	591·169
Prome East ... 225	195·83	...	60	135·83
Sittang... { West 255· East ... 94·51 }	349·51	·012	...	349·522
Salween	310·82	3·43	...	314·25
Not included in working plan.				
Prome West	200·	...	...	200·
Upper Salween	106·	...	...	106·
Pandau	10·	...	...	10·
Attaran	100.	...	...	100·
TOTAL ...	2262·70	3·442	60	2206·771

* Fuel Reserves in the plains.

Area of Plantations.

Plantations.	Area in 1872-73.	Total cost.	Area added during 1873-74.	Amount expended during 1873-74 on maintenance and extension.	Total area up to 1873-74.	Total expenditure incurred up to 1873-74
	Acres.	RS. A. P.	Acres.	RS. A. P.	Acres.	RS. A. P.
Rangoon ...	825·5	67,094 0 1	213·	28,331 5 6	1038·5	95,425 5 7
Tharrawaddie ...	484·	48,946 0 3	....	855 6 7	484.	49,801 6 10
Prome ...	Experimental Plantation only.					
Sittang ...	714·78	22,280 3 4	...	1,146 4 0	714·78	23,426 7 4
Salween ...	Experimental Plantation only.					
TOTAL ...	2024·28	1,38,320 3 8	213·	30,333 0 1	2237·28	1,68,653 3 9

Area of Forest Tracts protected from fire.

Forest Tracts protected from fire.	Area in 1872-73.	Total cost.	Additional areas protected in 1873-74.	Amount expended in 1873-74.	Total area protected up to 1873-74.	Total expenditure incurred up to 1873-74.
	Acres.	RS. A. P.	Acres.	RS. A. P.	Acres.	RS. A. P.
Rangoon ...	825·5	1,456 13 0	213·0	695 7 0	1038·5	2,152- 4 0
Tharrawaddie ...	15115·0	2,247 12 2	3520·	2,991· 10 3	18,635·	5,239 6 5
Prome ...	13122·	810 12 4	...	1,293 8 4	13,122·	2,104- 4 8
Sittang ...	644·8	440 8 0	2795·9	266 10 0	3440·7	707 2 0
Salween ...	8960·	30 0 0	...	50 12 0	8960·	80 12 0
TOTAL ...	38,667·3	4,985 13 6	6528·9	5,297 15 7	45,196·2	10,283 13 1

Prosecutions for breaches of the Forest Rules.

	Number of Prosecutions.		Convictions obtained or still pending.	
	Number of cases.	Number of persons.	Number of cases.	Number of persons.
Rangoon	5	5	4	4
Tharrawaddie	7	11	7	10
Prome	1	3	1	3
Sittang	...	...	...	...
Salween	10	10	6	6
Total ...	23	29	18	23

No. 3714-80 F.

BRITISH BURMA.

PUBLIC WORKS DEPARTMENT.

FORESTS.

To

THE SECRETARY TO THE GOVERNMENT OF INDIA,

DEPARTMENT OF REVENUE, AGRICULTURE AND COMMERCE.

Calcutta.

Dated Rangoon, 5th November 1874.

SIR,

IN transmitting the report on the Forest Adminstration of British Burma for 1873-74, I am directed to state that the Chief Commissioner regrets that there should again be delay in its submission. This delay is in some degree explained in the Conservator's forwarding letter, but Mr. Eden is of opinion that arrangements might have been made by the Conservator to ensure more punctual submission of annual reports from Divisional Officers.

2. In several instances, the Conservator has referred to events which properly pertain to the record of operations for the current year, but this is perhaps unavoidable, as much of the work of the past year did not reach fruition till the close of the year, and to have omitted all mention of schemes under consideration, would have given a false impression of the working of the department.

3. Under the head of "Forest Legislation," reference is made to the powers given to the Local Administration, under Act XIII of 1873, for levying duty and controlling timber floated through the rivers and creeks of this Province. This came into force on the 7th September 1873, and under this Act revised rates of duty on teak and other timber were notified at the end of the year. The result of their working cannot therefore be reported on.

4. The elaborate and exhaustive report by Mr. Baden Powell, the Officiating Inspector General of Forests, on the re-organization of the Forest system of this Province and the revised draft rules he has prepared have already formed the subject of separate communications. These rules really involve a consideration of the whole system of Forest conservancy in Burma. The subject is still under the consideration of the Government of India and has been so fully discussed in the correspondence that has passed on the subject, that it is not necessary to allude to it further in this report. It is to be hoped that before long, final and definite instructions will be received for the guidance of the Department in its future operations and that the establishment will be so re-organized and strengthened as to make it possible to carry out a system of real conservancy.

5. Good progress has been made in the demarcation of State Forests in the Prome and Tharrawaddie divisions. The total area sanctioned and demarcated in these localities during the past year is 148½ square miles of which 125 abound in

teak and other timber, 12½ in cutch trees and 11 contain fuel reserves for the Railway. Proposals for demarcating a further area of 631·69 square miles of Forest land in the Prome and Tharrawaddie divisions were matured towards the close of the year. A small reduction in area has been made in the Salween and Sittang divisions, for the reasons stated in paragraphs 10 to 12 of the report. The Chief Commissioner, thinks, that it is of the first importance, to endeavour to make our requirements for State Forests fall in, as far as possible, with the requirements of the cultivating classes; there is plenty of land suited for forestry which can be set apart without interfering with cultivation. Anything which causes heart-burning, or feeling of distrust of the Department in the minds of the people, is a serious hindrance to conservancy and reproduction; experience shews, that it is to the villagers in the neighbourhood of our forests that we must mainly look for assistance in reproduction and in keeping out fires and trespassers; the more we can make it worth their while to interest themselves in forest operations, the better for both parties. The Moo-choung reserve of 3·43 square miles has been thrown open to the people and an area of 78·25 acres of the Pyoon-choung reserve has been excluded, but this has been omitted in the summary of the area abandoned, shewn in paragraph 22 of the Conservator's report.

6. No permanent boundaries for any of the State Reserves have yet been made. It is very desirable that this work should be pushed forward, and Mr. Eden hopes that the current year will shew more real progress in this direction.

7. In demarcating the reserves, due consideration, it is believed, has been shewn to the requirements of the surrounding population and measures have been taken towards the organization of District reserves which are to be worked for the benefit of the people under the supervision of District officers. The great point to be kept in view in regard to these reserves, is, to make the forest produce, necessary for the purposes of ordinary village life, available to the rural population as cheaply and with as little interference as possible, while measures can, at the same time, be adopted to prevent the people's forests being denuded of produce by speculators who come to obtain a supply for distant markets.

8. The two rest houses under construction, referred to in para. 27 of the previous year's report, were completed during the year and two more were commenced. The sites for these buildings appear to have been judiciously selected, as they are all on or near laterite tracts at the foot of the hills where travelling is comparatively easy throughout the rainy season.

9. In the Prome Division, the experiment of endeavouring to cultivate old abandoned *Toungya* plantations by ploughing them and sowing teak and cutch seed, as well as measures for excluding fires from the reserves, have not been attended with much success. The failure in excluding fires is stated to be due to the inefficiency of the establishment to control the large area of Reserved Forests and to the *Toungya* cultivators in its vicinity, chiefly Chins, who are badly disposed towards the Forest Department. The remedy proposed by the Conservator in paragraph 42 will be tried; the Chief Commissioner is satisfied that by judicious management, the Chins could be brought to co-operate with the department in keeping fires out of the Gwaycho Reserve; but it cannot be said that a reserve which is surrounded on every side by *Toungya* cultivators has been well chosen. On the other hand, fresh *Toungya* plantations in the Tharrawaddie division, worked by Karens, are very promising. The system, however, was less successful in the Salween division, probably from want of careful personal superintendence on the part of the Deputy Conservator and his subordinates. The total area planted up to the close of the year under the *Toungya* system was nearly 367 acres while a further area of 253 acres is under treatment. It is very satisfactory to note that fires have, on the whole, been successfully excluded from these two forest divisions.

10. The average number of teak plants per acre obtained under the *Toungya* system in the Tharrawaddie Division was 725, the actual cost was only Rs. 13 per acre and this is capable of reduction in future years to Rs. 12. There is no reason why this system should not be extended so as to provide

for the planting of 1,000 or even, possibly some years hence, 2,000 acres a year, and if this can be done, there need be little anxiety in regard to the future supply of teak. Special officers should be selected for pushing this system among the Karens. Messrs. Hume and Popert deserve much credit for their success in making it acceptable to the people during the past year.

11. Paragraphs 59-75 of the report treat of "Unreserved or District Forests." This has already formed the subject of a separate correspondence with the Government of India, and the matter being still under consideration, it is not necessary, perhaps, to notice here the remarks of the Conservator on the subject which show, however, that he fully understands the true object of the proposed system. The demand for timber other than teak and for forest produce is on the increase, and the object of the formation of the District Forests is, as has been already observed in para 7, to protect the more valuable kinds of trees and make them available to the people of the surrounding country almost without interference or charge, while speculators, who if left alone would devastate these forests to supply distant markets, will be excluded.

12. The export of Cutch from Rangoon during the year has been, 2,45,222 maunds, representing a value of Rs. 12,51,304. Good cutch reserves have now been formed for future use, while the cutting of cutch in tracts now worked has been placed under a few simple regulations, the main object of which has been to prevent the wholesale destruction of this useful tree for fuel for the river steamers. It is an excellent and quick growing tree and it will be well to stock a considerable portion of the Railway fuel reserves with cutch, as what is not required for fuel will always be valuable for boiling into dye.

13. The trials for breach of the Forest rules that occurred during the year, are of a minor character and require no comment. The cases referred to in paragraph 79 are those of the previous year which were finally settled during the year under review, but they should have been shewn under the head of "Reserved Forests," instead of "Unreserved Forests."

14. Girdling operations were carried on during the year in the Rangoon, Tharrawaddie, Prome, Salween and Sittang divisions. According to paragraphs 80-82 of the report, 11,023 teak trees, 1,000 Thingan, and 100 pine trees were girdled. Thingan *(Hopea odorata)* promises to be a wood of some importance, it has been classed as No. 3 in *Lloyd's Register,* as suitable timber for ship-building and its use for Railway sleepers will shortly undergo a test on the Rangoon and Prome Railway. The forests of South Tenasserim, which have never been carefully examined as yet by the Forest Department, abound with this excellent wood.

15. In paragraph 89, the work of freeing teak trees from creepers is alluded to, but it is very doubtful whether enough attention is paid to this important operation by the Department.

16. The Chief Commissioner is glad to notice that the shipment of teak timber from this Province to the Cape of Good Hope, referred to in paragraph 179, of the previous year's report has turned out so well, as to induce the Government of that colony to ask for another consignment.

17. Blasting operations and clearing of streams to facilitate the transport of timber referred to in paragraphs 93-100 require no comment.

18. The work done under the head of "Survey and examination of Forests" during the year is detailed in paragraphs 101-133. Mr. Elsner's report on the Thingan Forests of Tavoy and Mergui districts is in the press and will be shortly submitted to Government. The extent of these forests and their abundant supply of mature timber of several varieties, and other valuable forest produce are such as would justify the establishment of Forest Conservancy in these localities which are singularly well situated for floating and shipping timber. An Assistant Conservator with a small establishment should certainly be stationed in Mergui with instructions thoroughly to examine the forests. Very good sleepers of Thingan from these forests are now being laid down in Rangoon, under contract, at about Rs. 2 per sleeper.

19. The Conservator should call for a careful report on the subject of the Tavoy cardamoms. The doubt he expresses as to these being the true *Elletaria cardamomum* ought to be capable of very easy solution. If it is not the best kind of cardamom, steps should be taken to procure good seed and induce the people to try an experimental cultivation of it, as the climate and soil are clearly adapted to the production of this spice. The Sapan wood also deserves more consideration from the Forest Department than it has ever yet received.

20. In the Magayee plantation of 1874, the area cleared and then taken up for teak cultivation during the year by Shan cultivators was 256 acres, of which 206 acres are under arboriculture. The experiment of sowing Padouk with teak seed has proved successful at Magayee. The expenditure on this plantation, excluding the payment which will become due to the Shans, amounted to Rs. 3,111-10 or Rs. 12-2-10 per acre. The additional payments to be made to the Shans will bring it up to Rs. 22-2-10. The reports of the two previous years' plantations in this locality, referred to in pragraphs 136-139, also the experimental cultivation of India rubber and Sappan wood is very encouraging. The result of Mr. Strettell's deputation to Upper Burma and his enquiries regarding the cultivation of *Ficus Elastica* will form the subject of a separate report.

21. During the year, experiments have been made for increasing the production of lac, and the Chief Commissioner is glad to learn that a lac producing nursery in the Magayee plantation has been successfully established by Messrs. Strettell and Nepean who have given this subject special attention. If the Forest officers acquire a thorough knowledge of the habits of the lac insect and take an active interest in the establishment of proper nurseries, there is every reason to hope that its production throughout the Province will be greatly increased and the quality improved. These experiments at Magayee form one of the most interesting features of the Forest history of the past year. There is no doubt that an immense deal has to be done in the developing of new industries in connection with forest products. The other teak plantations referred to in paragraphs 150-165 hardly call for remark. The expenditure during the year under review on all teak plantations amounted to Rs. 30,333, exclusive of Rs. 450-12 incurred on *Ficus Elastica* experiments.

22. The Cinchona plantation at Thantoungyee reported in paragraph 167 continues to be a success, but the Plumadoe plantation being on a lower altitude is unsuited for the propagation of healthy plants. The expenditure on these plantations during the year was Rs. 1,644-9, and the total expenditure up to date Rs. 9,329-3. It is intended to distribute plants to Missionaries, Karens and others who may desire to raise the tree on the hills. The Conservator should endeavour to carry on an experimental cultivation of the potatoe in the hills through the agency of the Cinchona establishment.

23. The out-turn of teak timber from the Forests in British territory during the year was 39,634 tons against 39,698 of the previous year, but in other timber such as Thitka, Thitkadoe and Thingan there has been an out-turn of 4,468 tons, or an increase of 1,956 tons over the previous year. From beyond the British Frontier 126,557 tons of timber were imported against 78,027 of the previous year. The Chief Commissioner is glad to notice the increase in the timber trade of Moulmein mentioned in paragraph 195 of the report.

24. The net receipts during the year amounted to Rs. 5,93,977 against Rs. 4,91,082 of the previous year, shewing an increase of 1,02,895. To the net revenue should be added Rs. 2,81,286, the permit revenue due on timber worked in the Salween forest, and difference in value of stock (see paragraphs 207 and 208); this will give a total of Rs. 8,75,263 as the actual surplus for the year.

25. The net profits realized during 1873-74 on timber extracted by the Department dealing direct with Sub-Contractors, amounts to Rs. 20-13-4 per log or Rs. 14-1-10 per ton, while the profit obtained from timber worked out on the Permit system gave only a profit of Rs. 2-15 per log or Rs. 3-9 per ton. The wasteful and destructive system of permit extraction has now been discontinued. It involves, it will be seen, a loss to Government of about Rs. 10 per ton.

26. The Conservancy and working, cost Rs. 3,32,391 against Rs. 2,03,929 of the previous year, and the cost of Establishment amounted to Rs. 1,42,140 against Rs. 1,32,268 of the previous year.

27. During the year 144 maunds of teak seed were distributed.

I have the honor to be,

SIR,

Your most obedient servant,

E. J. L TWYNAM, MAJOR,

Officiating Secretary.

BRITISH BURMA.

PUBLIC WORKS DEPARTMENT.

FORESTS.

To

THE SECY. TO THE GOVT. OF INIDIA,

DEPARTMENT OF REVENUE,
AGRICULTURE AND COMMERCE.

Calcutta.

No. 3714-80 F.

Dated Rangoon, 5th November 1874.

Received.

Submits British Burma Forest Report for 1873-74.

No. 138, dated the 8th February 1875.

From—G. H. M. BATTEN, Esq., *Officiating Secretary to the Government of India,*
To—*The Chief Commissioner of British Burma.*

I AM directed to acknowledge the receipt of your letter No. 3714-80F., dated 5th November last, forwarding the annual report of the Forest Department in British Burma for 1873-74, and to communicate the following observations and orders of the Government of India.

2. The Governor General in Council has noticed with satisfaction that some progress has been made in the demarcation of the forest reserves. From Appendix D of the report, it is noticed that, at the close of 1872-73, 134 square miles had been finally demarcated, 3 square miles were abandoned in the Salween district, and 148 square miles were added in the Rangoon and Tharrawadi districts, making the total area at the close of the year 279 square miles. I am, however, to request that in future annual reports a detailed list may be appended of the different reserves, arranged according to divisions and forest districts, shewing the areas of each reserve, and the principal trees with which they are stocked. The account given by the Conservator of the destruction of the North Nawing Forests in the Prome district by Toungya cultivation, recorded in paragraph 16 of his report, has been read with regret. It is evident from this and other passages of Captain Seaton's reports, as well as from Mr. Baden-Powell's report on the Burma forests, that Toungyas are steadily encroaching upon the best teak forests, and that the forest rules have been powerless to protect the forest resources of the province. The Government of India has invariably expressed its anxiety to promote the growth of cultivation in Burma, and I am to request that in demarcating the reserves due consideration may be given to the requirements of the surrounding population, but I am at the same time directed to state that it is absolutely necessary to secure the complete control of a sufficient area of teak-producing forest to satisfy the growing requirements of trade in respect to that wood. The statement given in Appendix D shews that the progress made in this respect has been very unequal in the different forest divisions. In Tharrawadi 90 and in Prome 166 square miles were reported safe against destruction by Toungya clearings, but in the Sittang division only 6 and in the Salween division only 17 square miles had been reserved. It is satisfactory that, in addition to the area reported as finally demarcated, about 631 square miles on both sides of the Irrawaddi river in the Prome and Thayetmyo districts were examined and approved by district officers, subject to provision in them for Karen Toungya grounds, but no proposed additions in the Sittang and Salween divisions are reported. I am to suggest for your consideration whether in order to ensure steady progress in all the divisions, a special staff of officers should not now be employed upon this work, to act in communication with the local Forest Officers. The staff of Forest Officers in Burma has recently been strengthened by posting to that province two of the assistants sent out at the end of last year by the Secretary of State, and arrangements will be made for transferring a third officer from some other province. But I am to suggest whether it might not be found possible to adopt a plan which has been successfully pursued elsewhere of deputing some junior Civil Servants to demarcate the forests in conjunction with the local Forest Officers. These Civil Officers are specially employed upon this work and paid for out of the forest grant, and it appears to His Excellency in Council that if a similar plan were adopted in British Burma, it would obviate the delays referred to in paragraph 8 of the report in obtaining the assent of the Civil Officers to the demarcation of the forests.

3. In the letter from this Department, No. 1391, dated 30th December last, the assent of the Governor General in Council to the formation of two classes, *viz.*, special and ordinary reserves, was communicated to you; but I am to invite attention to the remarks made in paragraph 4 of that letter, and to state that it is essential that a sufficient area of good teak-producing forest, conveniently situated for the export of timber, should be efficiently protected against Toungya clearings. This should be the first duty of the Forest Department in Burma at the present time. The selection and reservation of forest tracts for the yield of cutch, fuel, and other kinds of timber, and the measures to be

adopted to guard against the denudation of the higher ridges, may proceed hand-in-hand with the demarcation of teak-producing tracts; but the provision of a sufficient and permanent supply of teak timber to meet the requirements of trade is one of the first points to which the attention of the Forest Department should be directed.

4. The boundaries of the reserves are, it is understood, at present marked by cleared lines and by boards let into trees. I am, however, to state that boundary marks of a more permanent character appear to be desirable, and should be erected before a topographical survey of the reserves can be commenced. It is essential that all boundary marks of one block should be indicated by consecutive numbers; and, as it may not be practicable in all places, without undue expense, to build the masonry pillars mentioned in paragraph 23 of Captain Seaton's report, I am to invite your attention to the remarks made in paragraphs 9 and 10, section V (pages 21 and 22), of the working plan of 1868 forwarded with your predecessor's letter No. 545-45F., dated 18th August 1868, and to suggest whether, as therein indicated, good boundary marks might not be secured by having stout, short, roughly-squared teak posts imbedded deep in the ground, and secured by a foundation or pavement of stones flush with the ground, with the serial number cut into one face of the post.

5. It is satisfactory to notice that progress has been made in protecting several forest reserves from fire. Of the 45,000 acres reported to have been protected, it would appear that 38,600 acres were protected during the hot season of 1873 and 10,800 during that of 1872. His Excellency in Council trusts that progress in this important direction will continue to be made. It is a measure which should, in His Excellency's opinion, precede all other operations for improving the forests, for unless this is accomplished all other work such as planting in Toungyas, cutting creepers, thinning out other trees, and the like, is of no avail.

6. The progress made in planting teak in Toungyas is very satisfactory: 367 acres were, it is observed, actually planted up to the end of 1873-74, and 253 additional acres were taken in hand.

7. The other teak plantations have been increased during the year from 2,024 to 2,237 acres, by the addition to the Magayee plantation of 213 acres.

8. The Governor General in Council has also noticed with satisfaction the large exports of *thitka* and *thitkadoe*, two light, reddish-coloured woods, of which 1,105 tons were exported from Maulmein to Europe. Experimental shipments of these woods have been made from Burma as far back as 1862, but it does not appear to be quite certain whether the demand for them will continue. Although, therefore, His Excellency in Council will be glad to see the demand for woods other than teak increase, he does not think that too much stress should be laid upon the prospects of an increasing demand for these descriptions of wood. Teak, on the other hand, has certain qualities which no other Indian wood possesses; the demand for it has increased steadily during the last fifty years in spite of the substitution of iron for wood in ship-building, and every effort should therefore be made to secure a permanent supply of this wood, sufficient to meet the requirements of the Indian and European markets. In 1873-74 the demand for teak was great and prices were unusually high, and when that is the case (as Captain Seaton explains) the demand for woods of other kinds will rise. It should however be remembered that the small surplus realized this year may turn into a deficit, if the operations with these woods are overdone, or if the price of second class teak falls considerably.

The figures which Captain Seaton gives in paragraph 193 of his report, shewing the quantities of foreign teak timber imported during the past four years, lead to the inference that those forests which are situated in Burma proper, Siam, and the Karennee States, continue to furnish a large annual supply, and that they shew no signs yet of approaching exhaustion, but that their greater or less yield mainly depends upon prices and the greater or less safety of the country in which these forest tracts are situated. Nevertheless the teak forests beyond the frontier cannot be regarded as permanent sources of supply; nothing is done to improve or even to husband their resources, and though the natural reproduction of teak in its own climate is remarkable even in mixed forests, still reckless felling and fires must eventually exhaust even the richest teak forests.

10. From paragraphs 173 and 186 it appears that the total yield in teak of the forests in British territory and beyond the frontier was—

British	...	39,633 tons
Foreign	...	126,557 „
Total	...	166,190 tons

while the quantity exported during the same period amounted to 116,418 tons. It appears to the Governor General in Council that the measures necessary for the demarcation of a sufficient area of teak-producing forests to secure a permanent supply of timber equal to this large quantity, is a matter of very great importance, and I am to express a hope that these figures will convince you of the necessity of reserving not a small area of so-called special reserves in the expectation of converting them into nearly pure teak forests, but of all really valuable teak-producing tracts wherever they are situated, and wherever they can be reserved without interfering with the interests of the people.

11. In paragraphs 80 and 81 the Conservator reports what had been done in 1873-74 in the matter of girdling teak trees, and explains that the girdling operations were continued on the basis of the working plan of 1868. That plan, however, made provision only for five years ending 1872-73, because the condition of the forests did not admit of a longer forecast. The forest districts selected for this operation must, therefore, have been chosen on their own merits, for their selection could hardly have been guided by the provisions of the former working plan. It is probable that what the Conservator means is, that no more trees were felled than was provided in the average of the five years of that plan. Statement 3 of that document provided for the girdling of 58,000 trees during the five years in question, or at the rate of 11,600 trees a year. In 1873-74, 11,023* trees were girdled, which is within the average limit. But I am directed to explain that the plan of 1868 was based upon the condition of the forests as they then existed, and that it is evident that that condition has materially changed since 1868: the destruction of teak-producing forests by Toungya cultivation has also progressed rapidly, and it is therefore extremely doubtful whether the forests in their present state can yield 11,600 trees annually. Under these circumstances, I am directed to repeat the remark made in paragraph 4 of the letter from this office, No. 1391, dated 30th ultimo, that girdling operations must, if necessary, either be suspended, or limited to what for special reasons seems necessary during the years 1875 and 1876.

* Sittang	...	2,020 trees.
Other Divisions	...	9,003 „
Total	...	11,023 trees.

12. The financial results of the year have been satisfactory. The cash surplus amounts to Rs. 5,94,089; and taking into account the increased value of stock and the difference in the amounts due to the Forest Department at the commencement and close of the year, the net revenue on account of the year's transactions is 8½ lakhs.

CONSERVATOR'S REPORT.

Annual Report No. 1463, *F, dated* 31*st August* 1874, *on the Management and Conservancy of the Mysore Forests for the Financial year* 1873—74, *by* CAPTAIN G. J. VAN SOMEREN, *Conservator.*

I have the honor to forward the Forest Administration Report of Mysore for the year 1873—74.

INTRODUCTORY.

LEGISLATIVE.

2. The rules for the sale of timber by auction were revised during the year.

SPECIAL.

HEAD I.—STATE FORESTS.

FIRST SECTION.

3. In the Mysore Range, sketch maps of some of the forests were completed, simply shewing the areas. This has resulted in reducing the total area of State Forests, as shewn in the following form, by fifteen square miles, that being the difference between the estimated and measured areas;—

Reserved Forests.	Area in 1872—73.	Added during the Year.	Excluded or transferred to other Heads.	Total remaining in 1873—74.
	Sq. Miles.	Sq. Miles.	Sq. Miles.	Sq. Miles.
Lakvalli	35	...	...	35 measured.
Thegurgudda	20	...	...	20 not measured.
Danvas	...	...	...	Proposed.
Ubrani	10	...	...	10 not measured.
Basankote	8	...	...	8 do
Shankargudda	9	...	...	9 measured.
Sakrebail	10	...	...	10 not measured.
Chornyedhalli	...	...	...	... Proposed.
Masrur				
Ambligolla	16	...	...	16 not measured.
Kumsi				
Chordi				
Tallegadde	5	...	...	5 do
Ainur Marigudi	30	...	...	30 do
Begur	53	...	16	37 measured.
Kakankote	40	...	15	25 do
Viranhoshalli				
Metikuppa	30	...	...	30 not measured.
Hunsekuppa				
Bandipur	15	...	...	15 do
Berambadi	15	16	...	31 measured.
Devarayadurga	18	...	...	18 do
Bilikal	55	...	...	55 do
Maddagiri	10	...	...	10 not measured.
Kandal				
Nundydroog	7	...	...	7 measured.
Killekaval	8	...	...	8 do
Handigundi Betta	14¼	...	...	14¼ do
Uyamballi	8	...	...	8 do
Arkavati	3	...	...	3 do
Devarabetta	10	...	...	10 do
Evergreen.				
Kabbinale	14	...	...	14 do
Kagineri	9	...	...	9 do
Bajimalle	6	...	...	6 do
Sundekumri	6	...	...	6 do
Total.....	464¼	16	31	449¼ square miles.

4. In Nagar, 23,602 acres of forest land were applied for and made over to the Department at the settlement of a portion of the Shikarpur Taluk, but as they have not yet been proclaimed as State Forests they are not entered in the form.

5. I have lately applied for sanction to the proclamation as State Forests of the lands made over to the Department in the Taluks of Sorab, Shikarpur and Honnali (the last during the current year). If this is done, the Tallegadde Forests already in the list, and the greater portion of the Ambligolla, Kumsi and Chordi Forests will be included in the new lands. The area of State Forests would in that case be reduced by 21, and augmented by 130 square miles.

6. No demarcation work was done in three out of four Ranges. In Mysore the work carried out was the completion of the Bandipur Forest lines by cutting four miles of new demarcation, and the clearing of 20¾ miles of old lines.

Name of Forest.	New Lines cut.	Clearing old Lines.	Remarks.
Bandipur	4	...	26 9 0 per mile.
Ainur Marigudi	...	2	5 0 0 do
Begur	...	18	10 4 10 do
Kakankote	...	¾	7 8 0 do

SECOND SECTION.

REQUIREMENTS OF THE PEOPLE IN THE VICINITY OF STATE FORESTS IN THE MATTER OF WOOD, &C. HOW PROVIDED FOR.

7. With the exception of the right to collect watte, (a kind of reed) in the evergreen State Forests, and of collecting brushwood in Maddagiri, all rights within the State Forests are absolutely reserved to Government. When the forests were selected and made over to the Department, the requirements of the people around were considered. Grazing is permitted in some of the State Forests, but it is a concession to the public, and revocable at any time. The State Forests are also used as sources of supply to the small depôts under the District-Forest scheme. The Kurnagal, Sargur, Antarsante and Hanagod depôts are not far from the State Forests in the Mysore District; Tarikere (lately established in lieu of Linganhalli,) is not far from the Lakvalli State Forest, and there is a depôt at Ubrani close to the forest of that name.

THIRD SECTION.

8. The prosecutions for the breaches of Forest Rules are given below in the proper form:—

Ranges.	Number of Prosecutions.		Convictions obtained.		Cases pending.	
	Number of Cases.	Number of Persons.	Number of Cases.	Number of Persons.	Number of Cases.	Number of Persons.
Mysore	22	32	16	26	6	6
Nagar	118	327	91	217	3	16
Nundydroog	...	328	...	276	...	...
Hassan	11	12	11	12	..	...
Total.....	151	699	118	531	9	22

FOURTH SECTION.

IMPROVEMENT AND EXTENSION OF FORESTS.

11. *Roads.*—The Executive Engineer in Shimoga was not able during the past year to trace the portion of the Honnigere road, alluded to in para 19 of the Report for 1872—73; no money was therefore spent here.

In Hassan, 9 miles of road practicable for carts were opened from Sethalli to the Saklespur-Hassan road at a point near Alur. Ten miles of road were also made practicable for carts between Ane Betta and Tollalu, thus rendering the Ane Betta Forest accessible. The roads in this District cost the Department but Rs. 200.

In Mysore, Rs. 51 were spent in clearing and repairing cart-tracks in the Begur and Kakankote Forests.

PLANTATIONS.

12. The form now given is that prescribed by the Government of India, and deals only with planted areas:—

Plantations.	Area in 1872—73.	Total Cost.	Area added during 1873—74.	Amount expended in 1873—74.	Total Area up to 1873—74.	Total Expenditureup to 1873—74.	Remarks.
1. Lakvalli (Teak)...	15	863	...	13	15	876	
2. Sakrebail do	30	2,543	...	361	30	2,904	
3. Hebbe do	9¼	705	...	196	9¼	901	
4. Kakankote do	53	2,289	40	2,357	93	4,646	
5. Kumbarhalli (Timber)	106	2,756	71	2,190	177	4,946	
6. Maddagiri do	25	334	...	689	25	1,023	
7. Alkol (Sandal)	71	735	...	4	71	739	
8. Anapankatte do	237	559	...	58	237	617	
9. Gurupur do	30	1,176	25	1,128	55	2,304	
10. Karpur do	5	202	...	...	5	202	Abandoned.
11. Chota and Bara Hosharidi (fuel) ...	61	3,831	65	2,367	126	6,198	
12. Jadiganhalli do ...	35	1,584	17½	706	52½	2,290	
13. Nellal do ...	32	921	48	1,384	80	2,305	
14. Kadgodi do ...	10	521	33	1,029	43	1,550	
15. Kurandhalli do ...	121	1,127	10	493	131	1,620	
16. Karpanhalli do ...	13	979	40	1,206	53	2,185	
17. Mansandra do ...	59	1,701	30	968	89	2,669	
18. Appasandra do ...	67	2,161	36	1,009	103	3,140	
19. Kumalgod do ...	25	3,516	35	1,546	60	5,062	
20. Santaveri (exotic) do ...	4½	896	...	136	4½	1,032	
Total.....	1008½	29,369	450½	17,840	1,459	47,209	

13. (i) *Lakvalli, (teak).*—Remains unaltered for reasons given last year. The fences were maintained, and fires kept out; the young trees are generally looking healthy.

(ii) *Sakrebail, (teak).*—No extension was made here, but the plantation which measures 30 acres was weeded through several times, (the growth of weeds being enormous), and preserved from fire.

(iii) *Hebbe, (teak).*—An experimental plantation on the edge of the Jagar valley. The young trees have not made as much growth as was expected, and no extensions will be carried out here for the present.

14. (iv) *Kakankote, (teak).*—In the Mysore District and within the limits of the State Forest of Kakankote. It is formed on land out of which most of the valuable wood had been felled for the market, the idea being, as reported in the memo submitted with my No. 2815 of the 22nd December last, "to increase the value of the land within the

limits of the State Forests by covering it with valuable wood to replace that already removed for sale, and in lieu of commoner kinds which would otherwise grow up." As these forests in South Mysore have been worked steadily, for at least 100 years, the plan now adopted for restocking them with teak appears to be the best adapted to the purpose.

15. The fellings for the plantings of 1874—75 have been made near the Mastiguddi Hill in the same forest, and some little distance from the place where work has been carried on up to date. At Mastiguddi a block of worked out forest has been selected, measuring about one mile square, and this will be planted up systematically till fully stocked. The bamboos felled and the better trees were sent to the small depôts for sale.

16. Our great difficulty here has been the want of labor, especially during the planting season. Mr. Macpherson writing on this subject makes the following sensible remarks on the experience gained during the past two years.

"The only difficulty experienced was in the matter of labor. The scarcity was so great that it required my continual presence on the spot to keep the Kurubas together, and in this way the whole clearing" (53 acres of 1872—73) "was planted up although not till very late in the season."

"The plantation being the first of its kind, and the work being quite new to these jungle tribes, many of whom had never handled a momoty before in their lives, and who were unaccustomed to regular work, a difficulty in keeping them together was naturally to be looked for."

"It was however hoped that the experience of the first year would make them more reconciled to the work, and as no other means of livelihood was open for them, all works in the Kakankote State Forests having been stopped, it was expected that they would resort freely to the plantations in the second year."

"For the year 1873—74, another clearing of about 40 acres was made; during the time of felling, labor in abundance was procurable, but as soon as the rains commenced, and with them the momoty work, the number of workers decreased; and to carry on the work of the two plantations no more men were available than in the previous year when there was but one plantation to look after."

"Nor could I myself be on the spot as frequently as I could wish, the new District-Forest scheme taking up much of my time. As a matter of course the plantations have to some extent suffered."

"That of 1872—73 could not be supplied, it being considered more important to plant up and keep clear the new land. The expenditure too has been much heavier than it ought to have been, or would have been, had it been more under my direct supervision."

"The experience of the past two years has now, I think, conclusively proved that, if we are to rely on local labor solely, plantations in this locality cannot be carried on every year. A teak plantation requires considerable care both in its first and second year, after that it can be left very much to itself."

"I would therefore propose that a block of land suitable for plantations be taken up either in the Begur or Ainur Marigudi Forest, and that that and the Kakankote

one be worked alternate years. By this means we could provide regular work to all our Kurambars, a very necessary thing, for since the fellings have decreased, work has become scarce and many of the men have emigrated to the border forests. To import labor to work the plantations would be an expensive and hazardous measure. In this Government would have to compete with the planters of Wynad and Coorg, and in order to secure coolies would have to advance sums to each man in his country, a proceeding never likely to obtain sanction."

"Past experience has also proved that European supervision is absolutely necessary for plantation work. Natives cannot be trusted. Should these works therefore be extended, an officer should be allowed whose sole duties would be the supervision of plantations both teak and sandal. With the multifarious duties of a Range Officer, it is simply impossible for him to spare the necessary time."

17. Mr. Macpherson's proposals will be placed before the Chief Commissioner in connection with the abolition of the Hassan charge as a separate one from Mysore. The young officer thus set free will be able to render Mr. Macpherson material aid; and as teak will not grow satisfactorily elsewhere than in the south and south-west of the range, we must confine our operations to that part in spite of the want of labor.

18. At this plantation of Kakankote, an area of 53 acres was planted out in 1872—73, and it may fairly be described as satisfactory. The growth of the trees has been irregular, varying in the extremes from 11 feet 10 inches to 1 foot 6 inches, but the average growth is about 4 feet. Wild pigs have caused some little damage, and a small grub attacked the taproots of some of the trees and destroyed them. The plantation was weeded twice, but owing to the scarcity of labor failures were not planted up. This will be done during the current year, after which this part of the plantings in the Kakankote forests will cost but a small sum per annum for maintenance.

During 1873—74, forty acres were planted up, but instead of forming nurseries and transplanting, the land having been cleared was lined and pegged out at 6 feet apart. Seed was then sown early in the season at each peg, and this has proved very successful. The young trees are looking healthy and are of uniform height. Unfortunately the plantation has suffered from wild elephants that have made a run through it down to the river Kapini. Mr. Macpherson estimates that about 20 per cent of the young trees have been damaged by these beasts.

19. But a small amount of work has been carried out for the felling for 1874—75. Mr. Macpherson's constant absence on other work, and the poor supervision of the Mestri left in charge, is given as the reason for this; about 11 acres only have been felled.

20. (5) *Kumbarhalli, (timber).*—This plantation is in the Devaraydurga State Forests, and lies in a basin surrounded by hills, the sides of which, since the forest has been rigidly conserved, are fast getting covered with vegetation and trees. In the basin itself there are from 300 to 400 acres of land which can be advantageously planted up. Of this area, the year 1872—73 closed with the returns shewing 106 acres *planted.* But of this 40 acres planted out in 1871—72 was done in small pits, and the results have not been good, and the greater portion of this land will have to be again gone over. In 1872—73 was commenced the "big pit system" which has been a decided success throughout the Nundydroog Division plantations, both timber and fuel.

21. During 1873—74, about 71 acres were planted up here with various indigenous timber and fruit trees, among which were 9,200 casuarinas. Of exotics, 129 eucalypti (Jarrawood) were put down, and of these 113 are now alive exclusive of 187 put out in 1872—73.

22. (6) *Maddagiri, (timber)*.—Want of funds prevented anything much being done here more than maintenance. The site is good, being in the middle of worked-out land in a State Forest. About 20 acres were pitted.

23. (7) *Alkol, (sandal)* 118 acres:—and (8) *Anapankatte*, 250 acres, Here sandal seeds were dibbled in over large portions of the area available. The plan is a very inexpensive one, but as large numbers of the young seedlings die during the hot weather it will take a long time before the land is well stocked.

24. (9) *Gurapur, (sandal)*.—This plantation is in the Mysore District, the total available area being about 2,000 acres. In 1872—73, about 30 acres were ploughed, and sown with cajanus indicus in alternate lines with the sandal. The sandal germinated freely, and though the hot weather killed off very many, the area is well stocked with young trees, many of which are now four feet high, and look healthy and vigorous. A large quantity of seed was again put into the ground during 1873—74, but as scarcely any rain fell in the Mysore District till August 1873, the results were very poor.

25. The long drought in this District last year was equally unfavorable to the sowings put down in 25 more acres of new land prepared for seed. The seed germinated so late in the year, that the seedlings were not strong enough by the advent of the hot weather to withstand the heat, and the results have unavoidably been bad.

26. Mr. Macpherson has succeeded in obtaining for the department a block of land farther west, between Bettadpur hill and Fraserpet, and measuring one mile square. Here with a heavier rain-fall, he suggests carrying on regular operations, keeping Gurapur as a sandal reserve, and dibbling in yearly.

27. *The fuel plantations in Nundydroog Division.*—(10) *Chota and Bara Hossharidi.*—Here the department holds 2,000 acres of land set off by ditches. This area is treated as one plantation, but is actually divided into two unequal sized plots, as a portion of the land once made over to the department was at the request of the Commissioner given back to the neighbouring villagers. Here in 1872—73, 61 acres, and in 1873—74, 65 acres, were planted up with various indigenous trees, among which were 5,164 eugenia jambolanas, bassias and 2,500 casuarinas.

28. (11) *Jadiganhalli*.—In my last year's report, I had to speak most unfavorably of the state of this plantation up to that time, and the Government of India in reviewing the report was of opinion that it was scarcely worth while to spend money here for the purpose of stocking a detached spot of 395 acres. But before these orders reached me, a very large number of pits had been dug, and 17½ acres of land had been planted up. This planting has been most successful; of the trees put down in 1873—74, *not one plant* has failed to take root. I have therefore ventured to continue the operations at this plantation. The Government in its remarks on my report for 1872—73 objected to the small areas of the plantations in Mysore. But in the memo submitted with my No. 2185 of the 22nd December last, I shewed why large blocks of land were not obtain-

able, and the Chief Commissioner endorsed my explanation, which was accepted by the Government of India. Jadiganhalli measuring in itself but 395 acres is only two miles from Nellal, which measures 1,485, and Nellal again is a short two miles from Appasandra which covers an area of 672 acres.

29. (12) *Nellal.*—Measures 1485 acres in all, set off by a small ditch: 80 acres have been planted up; 32 acres in 1872—73, and 48 in 1873—74; doing well.

(13.) *Kadgodi.*—Available area 689 acres, enclosed by a small ditch. Ten acres planted up in 1872—73, and 33 acres in 1873—74; doing very well.

(14.) *Kumalgod.*—Available area 1115 acres enclosed by a deep trench. Twenty-five acres planted up in 1872—73, and 35 in 1873—74. The natural growth in a large portion of this plantation is very good, and planting is carried on in the barer spots. This plantation has suffered from being under the immediate supervision of a careless Mestri, who also proved dishonest, and has since been dismissed.

(15.) *Kurandhalli.*—Available area 324 acres, and close to Marsandra. Here 131 acres are nominally planted up, but only 10 acres on the big pit system, which is the only satisfactory one, and much of the so called planted area will have to be again gone over.

(16.) *Karpanhalli.*—360 acres available enclosed by a ditch: 53 acres planted up, but owing to the small quantity of rain which fell at this plantation, the results were not as good as elsewhere. In 1872—73, 13 acres, and last year 40 were planted up.

(17.) *Marsandra.*—Available area 524 acres, enclosed: 59 acres planted in 1872-73, and 30 in 1873—74. The young trees are doing well, but the lining is not as regular as it should be.

(18.) *Appasandra.*—Available area 672 acres, enclosed. During 1872—73, 67 acres, and in 1873—74, 36 acres were planted up. The plantation is looking well: 80 Acacias melanoxylon were put down here in large pits. Many of these trees are doing extremely well. The largest specimen is now over eleven feet in height with a stout stem and very healthy. These trees were raised in nurseries. Seed was sown in December 1872, and the seedlings put down in large pits in August 1873. The experiment has hitherto proved successful, and if we are fortunate enough to be able to raise large numbers of these quick-growing Australian trees, they will be of great benefit to the country. They thrive on the Nilgiris, and I got the seed thence.

30. (18.) *Santverri Exotic.*—This plantation has not proved successful; the report on it last year was unfavorable. I visited it on the 23rd April last, and found in it 814 trees in all.

Eucalyptus globulus.

Planted in 1871—72	.. ..	326 plants
Do 1872—73	.. ..	72 „

Eucalyptus rostrata.

Planted in 1873—74	.. ..	375 „
Eucalyptus of kinds, planted in 1873—74	.. ..	41 „
	Total....	814 plants

Of the 326 plants put down in 1871--72, 28 seem to have established themselves and vary in height from 15 to 22 feet. The remainder of that year's planting are all under 15 feet high. Of the eucalyptus rostrata, none are more than 4 feet in height, but they all look strong, and as far as can yet be judged will do better than the blue gums which almost invariably grow up with weak stems and unfit to carry their own weight.

31. The soil is a deep red loam, with gravel, and the drainage is good. The plantation has doubtless suffered from want of careful European supervision which was not available, but I am inclined to think that the climate does not suit the eucalyptus globulus. All the blue gums put down in the Devaraydurga plantation are also dead, I am experimenting with a few in the fuel plantations in Nundydroog, but am not hopeful of them.

32. The Karepur plantation (an experimental sandal one) is not in the form this year. It was a small plot, and as we have succeeded in obtaining a large block of land (see para 26), this small one will not be kept up.

33. Of the 18 plantations just reported on, four are of pure teak, and two of mixed timber. These may all be classed under IV. I. *d*. in the new classification to be adopted in the Budget estimates for 1875--76, as the work done in them comes under " IV. Treatment and creation of forests" "1 Natural forests." (*d*) "Reboisement, or restoration of denuded areas." It is true that at Kumbarhalli, in the Devaraydurga State Forests, our operations are being carried on, in land which has been under the plough, but we shall ere long be planting in the forest itself.

34. The sandal reserves and all the fuel plantations in Nundydroog should fairly be classed under " IV. 2 " which is " Treatment and creation of forests" " Artificial forests." Here we are raising wood in many places on bare land, while in the case of sandal, the seed is being put in in land bearing other trees, but well fitted to carry sandal.

35. The expression " big pit system" is frequently used in this report, and the Government of India has directed that " the question of expenditure on pits should be enquired into." I therefore propose now to enter fully into the reasons which led me to adopt this system as the one best calculated to insure good results, and which will be found to be the cheapest in the long run.

36. The average rainfall at each plantation cannot be given as we keep no registers. Of the nine fuel plantations (Nos. 10 to 18), eight are to the east of Bangalore itself, and I believe I am right in saying that the average rainfall of the taluks where they are situated is not 24 inches. The rains too are often local, some spots getting a far larger supply than others close at hand. While therefore we have a low rainfall, and several months without rain at all, and irrigation is not practicable in any of our plantations, we are entirely dependent on the rainfall, simply aiding sickly-looking trees by watering them occasionally during the hot weather from wells which give us a scanty supply.

37. We had not by any means our choice of land. The best is under the plough, and for obvious reasons, I always avoided applying for cultivated land, unless a small patch was wanted to finish a large block. In many instances, land otherwise suitable

was either *inam*, or *kayamgutta*, or so tied up that we could not get it, and this is the chief reason why the wishes of the Government of India, that plantations should be in blocks measuring each not less than 2000 acres, could not be carried out.

38. We had then to consider that our chief obstacles were, in many places, comparatively poor soil, and everywhere insufficient rain-fall. Enclosing the plantations and stopping all grazing was the first thing to be done, and the bare spots within the enclosures which were scoured year after year by the rush of water, were picked up in lines, and vegetation was thus enabled to commence its yearly struggle under somewhat more favorable conditions.

39. Planting operations commenced at Jadiganhalli, where, as I stated in my last year's report, almost all our experiments were made. Here we tried, (*a*) sowing seed broadcast during the rains in the natural scrub: (*b*) sowing in ground roughly broken up with the pick: (*c*) sowing in ploughed land: and (*d*) in trenches. They all failed. By this, it is not meant that not a single tree was raised, but the results were so small that, practically speaking, the words " complete failure" are the only ones I can use. I am aware that, not far from Bangalore, a Deputy Commissioner succeeded in raising long lines of Cassia Roxburghii in ploughed land, over a circumscribed area. But he has himself told me that it would not be fair to test other work by this. The land is well situated, the soil good; it is close to the head-quarters of a taluk; the Amildar was warmly interested in the success of the trial, and there was plenty of labor forthcoming to clear the scrub and plough the land. The Forest Department could not count upon such a concatenation of favorable circumstances, even if the expense, under any management, of clearing large extents of scrub and thorns did not forbid the general use of ploughs. Again, as every ryot turns out in the first rains to plough his own fields, we, wanting the same description of labor at the same time, would either be compelled to force labor, or to wait till the end of the ploughing season, when we might get a few men not employed in sowing to do a little ploughing. The first alternative is out of the question; the second would be a waste of money.

40. The objections to sowing broadcast were that, when the seeds germinated, and many thousands did so, the seedlings were not able to struggle through the ensuing hot weather and died off by the acre. I therefore altogether abandoned plans (*a*) (*b*) and (*c*) (see para 39).

41. It was however imperative that the soil should be worked and prepared for the reception of seeds, if the plants were to live, and trenches were tried in Jadiganhalli. These were dug, one foot deep, one foot broad and four feet apart. The scrub had to be cleared for these trenches and the expense of doing this and filling in was heavy. Seeds were sown in the trenches and germinated freely, but our end was not gained, as the seedlings did not grow up into trees. Thousands died off during the hot weather and the grass no longer grazed down grew up to a great height, and falling on the young trees choked them. An attempt to cut it away was made, but stopped on account of the expense.

42. The estimates framed for pitting were so high that I hesitated to incur the responsibility of commencing it, but at last decided upon doing so, and at Kurandhalli, Jadiganhalli, and Kumbarhalli, pits, one foot cube, were dug. Plants raised from seed

in nurseries were put out in some of them, and in others seeds were sown. The seed sown pits again gave highly unsatisfactory results, and though the transplants in many cases lived, they did not do as well as could be wished; and at length, in 1872—73 when we were about to commence planting in the new lands then lately made over to us, I determined to try the big pit system, and henceforward to raise all plants in nurseries, to let them stay there sufficiently long to form plenty of roots, and finally to transplant them into pits each three feet cube. After twenty months' experience of this system I have every reason to be satisfied therewith.

43. In 1873—74, the total sum spent on the Nundydroog plantations, (No. 5, and Nos. 10 to 18 in form,) was Rs. 14,387. Of this Rs. 2,064 was spent in tools, in seeds, in paying for a boundary ditch run round about 2,000 acres, and in sundries. The balance of Rs. 12,283 was spent in the supervising (excluding Assistant Conservator's pay) and watching establishments; in the nurseries; in pitting and transplanting; and in filling up failures of the past year. Three hundred and eighty five acres of new land were planted up, thus giving an average of nearly Rs. 32 per acre. In calculating like this, on *planted areas only*, the quantity of rain that falls during the year, and its distribution will naturally affect the average cost. Transplanting can only be carried on in favorable weather, and a late monsoon, a stoppage of rain for a fortnight, or an early cessation of the rains will greatly alter the average cost per acre. The rains during 1873—74 were not favorable. They began late, and were not plentiful: the planted area was thus not what it would otherwise have been, and the average cost is necessarily higher. But with all these drawbacks, the cost is I think very moderate, and the next paragraph will confirm this opinion.

44. On the 1st April 1873 there were 254 *acres of pitted land carried over from 1872—73, ready for the plantings of 1873—74. On the 1st April 1874, 321 acres of land ready pitted were carried forward for the plantings of 1874—75, shewing an increase of 46 acres on the out-turn of work.

45. I have good hopes that we shall be able to reduce the average this year, as the rains have been so favorable. Our coolies and Mestris are now well up to their work, and the estimates for 1875—76 will shew on good grounds that the average will in all probability be not more than 27 rupees per acre.

46. Our experience throughout is almost identical with that undergone by the Plantation Officers in the Panjab, if I may judge by the papers read at the Allahabad Forest Conference in January last.

Mr. Wild writes thus of the Phillour plantation. "The plot was in the first instance trenched at 15 feet apart and sown with Kikar, &c., a small amount of water being obtained by wells. But it did not succeed, and was again resown with but little better result. Planting was then resorted to, and nurseries of Shisham and Phullai (*Dalb*: *Sissoo*, and *Ac modesta*) were formed in the plantation itself and watered by wells. During the rains young plants of Shisham and Kikar, obtained from the lines that had succeeded in the former sowings, were put out into pits, and have almost everywhere succeeded. Thus after three trials and an expense of from Rs. 50 to Rs. 60 per acre, we have a complete plantation dependent simply on the natural rain-fall." Mr. Ribbentrop says (page 171) "I do not believe sowing will answer at all, but we must first produce plants with roots

*In para 32 of my Report for 1872—73, this was shewn as 300 acres, but afterwards found to be wrong. The correct figures are 254.

fully developed in nurseries." At page 155, Mr. Greig, (Conservator, N. W. P.) "I do not at all agree with Mr. Craw about broadcast sowings: such may do to fill up small glades inside a forest, but for covering bare hill sides I should recommend very strong nursery raised plants that have been transplanted at least twice; the young tree would have great disadvantages to contend with—no shade and want of moisture—and should be as strong in root growth *as possible*."

47. This independent testimony, the fruit of the experience of my brother-officers in the department, makes me feel all the more certain that we are now, in Mysore, proceeding upon the only plan that will succeed. Strong nursery raised plants, to hold which large pits are wanted, is the best plan, and I strongly advise its being adopted as the only method to be used here, in almost every locality in which we shall ever require planting to be carried out.

48. Almost all the land we hold for fuel plantations is covered with a scrub growth of *dodonœa*, *wrightia tinctoria*, *cassia auriculata* and small thorns. I have, therefore, as the ground is not actually bare, and to avoid the very great expense of clearing out much scrub, planted at 15 feet apart during the past year, thus giving 193 trees to the acre, each growing tree has cost us, all told, a little more than two annas, and as already stated, this average will I hope be reduced in future.

49. Besides the sowings and plantings which have been reported on at length, large quantities of sandal and bamboo seeds were dibbled in, in the State Forests at Nundydroog, at Killekaval, and at Handigundi betta, and some small operations carried out in Hassan, which will fall to be reported on next year.

FIFTH SECTION.

ACTUAL YIELD OF FORESTS, DISPOSAL OF TIMBER, &c.

50. *Nagar Range.*—Timber.

Teak logs.	Jungle logs.	Teak poles.	Remarks.
920	1,039	202	

51. *Collection at Depôts and Sales.*

Description of timber.	Collections.		Sales.				
	Logs or pieces.	Cubical contents.	Logs or pieces.	Cubical contents.	Rate per cubic foot.	Amount realized.	
Teak	444	10,783	752	13,742	0 13 7*	11,606 13 7	*nearly.
Jungle	1,198	20,592	2,874	42,136	0 7 4*	29,198 1 1	*nearly.
Teak poles	575	...	1,760	...	...	889 13 6	
Miscellaneous	498	...	467	...	...	72 1 0	
Total.....	2,715	31,375	5,853	55,878	...	41,766 13 2	

52. Most of the felling of teak was in the forests near Shimoga, as the Waddar-cartmen refused to work out timber selected in Lakvalli by Captain Jarrett, on the ground that the place where he wished them to work was unlucky, they having lost a large number of draught cattle there in a former year. Higher rates were offered but without avail. Captain Jarrett is trying to induce them to work here, as the wood is good and should be worked out.

53. A much larger quantity of jungle-wood was disposed of than in the previous year, but at lower rates, caused as far as can be judged by the sale of the wood sold in Sorab, and which was felled under the Survey Guarantee Rules.

54. Sandalwood.

Collections at stores, in tons.	Total Cost per ton.	Tons sold.	Rate.	Amount in Rupees.	Remarks.
235½	34 9 7	267	394 15 0	1,05,450	
65		69¾	9 6 0	654	

55. *Mysore Range.*—Timber fellings.

Teak.		Jungle.		Branches and poles.				Bamboos.	Remarks.
				Teak.		Jungle.			
Logs.	Cubic feet.	Logs.	Cubic feet.	No.	Cubic feet.	No.	Cubic feet.	Number.	
48	1,295	59	1,603	14	237	24	231	216	

The Mysore market is now glutted with timber, especially teak. The Madras Forest Department, and private individuals who hold leases of Jahagir and other forests in Madras have brought in large quantities of wood which are still unsold. As it would be of little use to add to the stock on hand under these circumstances, Mr. Macpherson with my sanction limited his fellings to the small quantity shewn above. The rest afforded to the State Forests, which have been steadily worked for teak for many years past, is by no means to be regretted.

56. Collections at Depôts and Sales.

Collections.			Sales.				Remarks.
Description of timber.	Logs.	Cubical contents.	Logs.	Cubical contents.	Rate per cubic foot.	Amount realized.	
Teak	145	4,377	33	904	1 2 0	1,020	*This is the average of 6734 feet; 275 feet were delivered to the Revenue Department near the forest at a lower rate 0—7—6, as it had cost the Department less.
Jungle	259	4,634	314	7,009	0 13 7*	377	
Poles and branches	531	3,666	196	408	0 14 9	5,879	
Teak sleepers	...	...	318	2,471	0 8 11	1,386	
Bamboos	...	...	276	...	...	45	
Total.....	935	12,677	1,137	10,792	...	8,707	

57. There was but one timber auction held, and that in March, but the demand was so small that but little was disposed of. A large number of sleeper pieces felled by order for the Mysore State Railway are still on hand.

58. The Guardian to His Highness the Maharaja applied for a further grant of 6,000 cubic feet of teak, of which quantity 3,344 feet were supplied during the year, at an average rate (nominal) of Rs. 1—6—0 per foot. The rate is fixed at this figure as the wood supplied is all of the best. No realizations on this wood appear in the Treasury returns, the value of it was Rs. 4,599—4—6.

59. A large quantity of wood was carted out of the forests, by the contractor, and laid down near the road side to Mysore. Some of the logs so brought out measured each 100 cubic feet, but as the greatest difficulty was experienced in bringing these out, I have consented to the very large logs being sawn in two, lengthways, in future. The quantity brought into Mysore itself was not more than 12,285 cubic feet, the contractor not having worked so energetically this year. No payment is made for wood till delivered at Mysore.

60. Collection of sandalwood.

Collection at stores in tons.	Cost per ton.	Tons sold.	Average rate per ton.	Amount in Rupees.	Remarks.
522½	32 1 7	350	416 14 1	1,45,909	Good wood.
30		53	30 4 1	1,606	Inferior wood.

By means of a large transfer from the funds provided for felling and carting of timber, (operations in which for reasons already given were small), a very large quantity of old dead wood and roots was collected and brought to stores. Of the quantity sold, only 27½ tons were of billets, the remainder being 105 tons of roots and 217½ of jajpokal, or split and broken trunkwood. The rates obtained were very good. The cost of collection was Rs. 7—0—5 per ton less than 1872—73.

61. *Hassan Range.*—No timber.

62. Sandalwood collected and sold.

Collections at stores in tons.	Cost per ton.	Tons sold.	Average rate per ton.	Amount in Rupees.	Remarks.
100	35 9 8	56	593 10 0	33,243	Good wood.
53		43	9 13 9	424	Inferior.

All the Hassan sandalwood is sold at the Seringapatam Koti in Mysore. Last year the cost of collection was Rs. 51—11—4, while this year it stands at only Rs. 35—9—8, or Rs. 16—1—8 per ton less. This is due to the good arrangements and careful supervision exercised by Mr. I. Stevens, 3rd grade Forest Ranger, to whom Mr. Jellicoe entrusted the work, as there was good reason to believe that the Monegars had not been as careful as they might have been. None but dead trees or trees which were manifest-

ly dying down from the top were felled, but the old roots collection has still to be made in this District. Mr. Stevens deserves great praise for his conscientious work, and I bring his name forward prominently, as I hope he will be promoted as an encouragement to him and others. The wood exposed for sale was of very good quality, the average rates are therefore very high, being for good wood Rs. 154—2—0 in excess of those obtained in 1872—73.

63. The actual sales at depôts were not quite ⅔rds of the estimates, and were realized on bamboos only.

64. Sandalwood collected and sold.

Collection at stores in tons.	Cost per ton.	Tons sold.	Average rates.	Amount in Rupees.	Remarks.
89½	45 14 6	104½	299 15 10	31,349 1 9	Good wood.
12		23	7 2 6	164 11 0.	Inferior wood.

The collection of sandalwood in this range was not made till very late in the year' and the auction did not take place till March *1874. This was too late in the season, and the rates obtained were very much lower than any where else. The difficulty in getting money last March was great, owing to the very high rates charged by the banks for discounting paper, when a large amount of cash had been remitted to Bengal. This also told unfavorably on the rates. In para 58 of my Report for 1872—73, I mentioned that the department still had to make over 40 kandis, (10 tons), on a tender accepted in 1871—72. This was delivered in full, and so far helped in keeping down the average rates of the year. But the chief cause of the low rates was undoubtedly the late date of sale, and this again was owing to the want of proper arrangements made by the Officer who was relieved of the charge of the Range by Mr. Ludlow in July last. Mr. Ludlow had great difficulty in settling the accounts of the Manegars, and was unable to get in his wood in time. The wood though sold is still lying in the Koti, the purchasers being unable to remove it on account of the monsoon having set in before they could get it away to the western coast, to which coast the greater portion of the Bangalore sandalwood still goes in spite of the railway being at Bangalore itself.

* When the market rates had fallen in Bombay.

65. The orders of the Government of India restricting the quantity of sandalwood to be sold to 500 tons per annum having been cancelled, large quantities of old roots and wood have been collected and sold throughout the Province.

DISTRICT FORESTS

66. On the 31st March 1873, eleven depôts had been opened in the Mysore District, for the sale of small wood and bamboos. During 1873—74, 29 depôts were opened in the Province; in Mysore 3, in Nagar 22 and in Hassan 4. None were opened in Nundydroog, the license system is here continued and has not yet been abolished.

67. The total sum estimated as receipts by sale of small wood and bamboos at the depôts was Rs. 74,000, in detail as below :—

Nagar	26,000
Mysore	18,000
Hassan	12,000
Nundydroog	18,000
Total——	74,000

The receipts were :—

Nagar	28,763
Mysore	21,142
Hassan	2,143
Nundydroog	1,096
Total——	53,144

This shews a falling off of Rs. 20,856, but as the license system was continued in Nundydroog throughout the year, the depôt sales were restricted, and will be more fully reported on further on. The value of wood sold in this range on license was Rs. 3,440.

68. The expenditure under District Forests, including both working and establishments for the year 1873—74, was a total of Rs. 53,034 detailed as below :—

Nagar	25,109
Mysore	16,444
Hassan	5,796
Nundydroog	5,685
Total——	53,034

69. The stock in hand at close of the year is valued at Rs. 24,410, making allowance for this the net revenue on wood sold at the small depôts is Rs. 24,520.

Realizations	53,144
Stock in hand	24,410
Total....	77,554
Deduct Expenditure ...	53,034
Net Revenue....	24,520

70. In my half-yearly reports I had occasion to notice the unsatisfactory work in Nundydroog especially, and the report on the half-year which closed on the 31st July will contain the recommendations made on data obtained since 31st March 1874 for abandoning the scheme in all but two taluks of Nundydroog, and in all but two circles of Hassan.

71. The total sales for the Province of Mysore of wood on license from 1868—69 to 1872—73 inclusive were :—

	Rs.
Nagar	60,964
Ashtagram	16,012
Nundydroog	19,443
Total...	96,419

which gives an average of Rs. 19,284 per annum realized without any cash expenditure, but at the cost of great waste and theft in the forests. The actual sales under the District-scheme were Rs. 53,144, and after deducting expenditure and adding value of stock, I have shewn the net revenue to be Rs. 24,520. As a part of this stock is bam-

boos, and much of it small wood, a liberal allowance for deterioration being made, the returns for the year may be taken at a little more or say Rs. 20,000, than the average of the past five years.

72. In Hassan the chief difficulties with which Mr. Jellicoe had to contend were want of carriage, and the sales, from Udves held by private individuals, of wood and bamboos. Under the rules which allow all Inamdars to sell their wood of the unreserved kinds, the sale of wood from inam lands has been largely increased since the forests were closed to indiscriminate felling. This source of supply of wood interfered with our sales to a small extent in Mysore and Nagar, but chiefly so in Nundydroog, and our operations have increased the supply of wood from the Madras side *viâ* the Oossoor road and to a certain extent by rail.

73. In Nagar the privilege accorded to ryots of felling wood free for cowsheds was greatly abused, and interfered seriously with our depôt sales which would have been still larger but for this cause. The abuse became so bad, that fresh rules giving larger powers to the Civil Officers to restrict such fellings, or wholly to stop them in localities where necessary, were submitted, and have since the beginning of the current year been sanctioned. As the Survey operations proceed, the revenue from sale of wood to ryots may be expected to decrease, as, under the Survey guarantee, occupants of land become at once possessed of all unreserved wood and at the close of a fixed period of all reserved wood standing on their fields. This must reduce the demand on the Government Forests, a result however which would equally have happened whether the license system was continued or not.

74. The strictest orders regarding careful felling have been issued to the Officers in charge of Ranges, and they have been made to understand that the first consideration must be the conservation of forests, but this must of necessity produce its natural result for a time, *viz.*, a reduction in the cash revenues, while the improvement of the forest will be adding to the capital of the department. Unfortunately a stock account of such property cannot be prepared without more accurate data than we now have, and looked at solely from a cash point of view, the District-Forest scheme may for a time appear to be wanting. But it would not be fair to judge simply by that standard. Experience is shewing us where we have made mistakes, and also where we may safely relax our rules, and for myself, I still think that the scheme is sound, and worked within proper limits will eventually pay well.

75. I have *not* included the value of District-Forest stock in the general stock return, as the description of wood is very different from that in our large depôts. It is simply entered in a note in statement No. 28. By next year we shall be better able to fix a value on such stock making allowances for its deterioration, and this being sanctioned, the value will be included in the general returns for 1874—75.

Wood felled in settled taluks in Nagar under the Revenue Survey Guarantee (Forests.)

76. In the Sorab Taluk, the whole of the reserved wood felled by the Department under the Survey guarantee had been collected and sold by the 1st August 1873, operations having commenced on the 1st August 1871. The total quantity thus felled and sold was 32,137 cubic feet, at a total outlay of Rs. 7,701—7—6, and an income of

Rs. 17,934—9—1. Transport for the collection of the whole of the wood at the most favorably situated depôts could not be obtained, and hence the sales at places remote from roads were not as good as those at places like Sorab, Tallegadde, and Chennapur. This tended to decrease the amount of profit which would otherwise have accrued.

77. In the Shikarpur Taluk, during the year allowed to the Forest Department for the removal of the reserved trees, and which closed on the 31st May 1873, 3,498 trees were felled at a cost of Rs. 467, and they are now being moved into depôts.

78. In the same taluk, three Magnis were not settled till May 1873, and the year allowed to the Department closed on the 25th May 1874. In these three Magnis all reserved trees on occupied lands were taken out. There were felled up to 31st March 1874, 1,913 teak, 1,312, blackwood, 1,271 honne, and 186 nandi trees: 3,795 trees were felled in addition to the above during the current year. The expenditure in felling is debited to the District Forests, and the wood sold in the District depôts.

GENERAL.

79. *HEAD I.—FINANCIAL RESULTS.*

Receipts.	Estimates.	Actuals.	Expenditure.	Estimates.	Actuals.
i. Sale of timber brought to depôts.					
Timber...	32,250	43,502	*A. Conservancy and Working.*		
Sandalwood	67,840	1,06,107			
ii. Removed by purchasers ...	1,000	1,116	i. Timber expenses.		
vi. Sale of fruits and minor forest products	300		Timber...	9,000	12,885
vii. Sale of confiscated timber ...	1,000	6,085	Sandalwood	8,480	10,416
ix. Miscellaneous receipts ...	1,000		ii. Purchase of tools	500	5
Collections from District Forests..	45,950	59,318	iii. Feed and keep of cattle ...	600	260
			vi. Plantations	1,500	771
			ix. Experiments to test the value of timber...	100	96
Total.....	1,49,340	2,15,128	x. Communications	2,000	100
Deduct Expenditure	78,238	78,405	District Forest working charges ...	18,000	15,785
Balance	71,102	1,37,723			
			A. Total.....	40,180	40,318
Add—					
			B. Establishments.		
Outstandings at close of the year.	738	...			
Value of stock at close of the year.	23,717	24,455	i. Salaries	24,228	23,978
			Deputation allowances ...	...	347
	...	1,62,178	ii. Travelling allowances... ...	3,400	2,826
			iii. Contingencies	500	1,612
Deduct—			District Forest Establishment all charges	9 930	9,324
				38,058	38,087
Realizations on account of outstandings at commencement of year...	2,478	...			
Value of stock at commencement of year	62,837	65,315			
Net Revenue.....	...	96,863	Total A and B.....	78,238	78,405

80. *Receipts.*—An increase under every head; the most important being under timber Rs. 12,252, owing to the sales of junglewood being much larger, and to the sales of wood off occupied lands in Sorab. Under sandalwood an increase of Rs. 38,267, owing to larger quantities being sold than budgetted for, and the selling rates being higher than the valuation. Collections from District Forests were Rs. 13,368 in excess of estimates; of this sum Rs. 2,763 was excess of actuals over estimates in sale of wood at small depôts, which brought in altogether 28,763 rupees.

81. In expenditure, under A. Conservancy and Working, a total increase of Rs. 138.

	Rs.
Increases .. .. :	5,821
Decreases	5,683
Increase...	138

The chief *increases* were under timber working 3,885, and sandal 1,936.

The chief *decreases* were under communications Rs. 1,900, the work on the Hanni-geri road not having been carried out for reasons given in para 11, and Rs. 2,215 under District Forests.

82. Under B. Establishments, a total increase of Rs. 29.

There was a saving under 1. *Salaries* of Rs. 1,650, but an increase of Rs. 347 deputation allowance paid to Mr. Dickinson when he acted for the Deputy Conservator, who came into Bangalore to act for me while absent on duty.

83. Under travelling allowances, a saving of Rs. 574, and under District-Forest Establishments Rs. 606, but under contingencies an increase of Rs. 1,112, of which Rs. 727 were paid in satisfaction of a decree against the Department.

84. After adding and deducting the differences in outstandings and value of stock at beginning and close of the year, the net revenue of the range was Rs. 96,863.

85. Mysore Range.

Receipts.	Estimates.	Actuals.	Expenditure.	Estimates.	Actuals.
i. Sale of timber brought to depôts.					
Timber...	39,750	9,428	*A. Conservancy and Working.*		
Sandalwood	48,000	1,47,590			
ii. Do. removed by purchasers ...	300	...	i. Timber expenses	21,500	6,495
			Sandalwood	6,750	17,736
v. Grazing dues	200	...	ii. Purchase of tools, &c.	300	16
vi. Sale of fruits and minor forest produce	2,500	1,833	iii. Feed and keep of cattle ...	1,000	316
vii. Sale of confiscated, drift, and waste timber	50	3,840	v. Charges connected with the collection of revenue on grass, &c. ...	100	100
viii. Fines and forfeitures	50	21	vi. Plantations	2,400	3,648
ix. Miscellaneous receipts ...	1,500	391	vii. Forest work	500	471
Collection from District Forests...	30,650	32,616	ix. Experiments to test the value of timber, &c.	50	...
			x. Communications, &c.	1,000	360
Total.....	1,23,000	1,96,219	District Forest working charges	9,500	11,776
Deduct Expenditure.....	65,244	64,149		43,000	40,918
Balance.....	57,756	1,32,070	*B. Establishments.*		
Add—			i. Salaries	14,232	14,634
			ii. Travelling allowances... ...	2,100	2,203
Outstandings at close of 1873—74	8,472	...	iii. Contingencies	700	1,429
Value of stock at do do ...	1,35,276	1,43,748			
			Deputation and special allowances.	...	297
Total.....	...	2,75,818	District Forest	4,812	4,668
Deduct—					
				21,844	23,231
Realizations of outstandings at close of 1872—73 ...	1,576	...			
Value of stock at close of 1872—73	1,02,172	1,03,748			
Net Revenue.....	...	1,72,070	Total A. and B.....	65,244	64,149

86. *Receipts.*—In para 57 I have shewn why the timber sales were so small as to produce but Rs. 9,428, (exclusive of the wood valued at Rs. 4,599 supplied to the Palace,) or allowing for that supply, Rs. 14,027, against an estimate of Rs. 39,750. Under sandalwood, actuals exceeded estimates by Rs. 99,590. The Government of India having removed the restriction on the quantity allowed to be sold, we disposed of 353 tons to make room for fresh wood.

87. Under VII *confiscated wood* there is an increase of Rs. 3,790. This is due to the sale at Mangalore of sandalwood stolen in 1869—70, by a Daroga. The wood was seized in that year, but not sold by the Madras authorities who held it till 1873—74.

The actuals under District Forests shew an excess of Rs. 1,966.

Under VI, sale of minor forest products in State Forests, and IX, miscellaneous receipts, the actuals were Rs. 2,724, against an estimate of Rs. 4,000.

The year closed with a large quantity of sandalwood and some timber in hand, valued at Rs. 1,35,276, against a stock at close of 1872—73 of Rs. 1,02,172.

Receipts.—	
Increases	1,05,346
Decreases	32,127
Excess Rs. ..	73,219

88. *Disbursements.*—I have elsewhere stated why the timber operations during 1873—74 were limited; and on the other hand why those in sandalwood were extended. The enhanced expenditure under sandalwood was met by a sanctioned transfer from timber. Under VI, plantations, Rs. 1,248 were spent in excess by a sanctioned transfer, and so was the excess expenditure under District-Forest working charges, which amounted to Rs. 1,976.

89. Under B, *Establishments*, a small increase under salaries, Mr. Macpherson having been absent from his Range at the close of the year, drew his February 1874 pay, in the current year. A small increase under travelling allowances of Rs. 103: under contingencies of Rs. 729, caused by the payment of rewards to informers in the case of fraud when the sandalwood referred to in para 87 was stolen. An increase of Rs. 297 paid to Officers who acted while Mr. Macpherson was absent from his Range, and a decrease under District-Forest establishments of Rs. 144. All the increases were met by transfers from other savings.

	Increases.	Decreases.	Savings.
A	14,210	16,692	..
B	1,531	144	..
	15,741	16,836	1095

90. After allowing for differences in value of stock, and realization of outstandings, the net revenue of the range was Rs. 1,72,070.

91. Hassan Range.

Receipts.	Estimates.	Actuals.	Expenditure.	Estimates.	Actuals.
i. Sales of timber at depôts.			*A. Conservancy and Working.*		
Timber...	5,000	...			
Sandalwood	38,400	33,672	Timber expenses	1,000	2
ii. Removed by purchasers ...	...	...	Sandalwood	4,800	5,449
vi. Sale of fruit, &c.	300	1,981	ii. Purchase of tools	100	84
vii. Sale of confiscated timber ...	100		iii. Feed and keep of cattle ...	600	...
viii. Fines and forfeitures	50	...	iv. Charges connected with collection of minor forest products ...	50	27
Collections from District Forests...	14,350	7,489	vi. Plantations	1,000	240
Total.....	58,200	43,142	vii. Forest work	500	...
Deduct Expenditure.....	29,054	20,901	ix. Experiments to test the value of timber...	100	...
Balance.....	29,146	22,241	x. Communications	1,600	6
Deduct—			District Forest working charges...	7,300	3,893
				16,450	9,701
Realizations of outstandings at close of 1872—73 ...	...	55	*B. Establishments.*		
		22,186	i. Salaries	7,188	6,859
Add—			ii. Travelling allowances... ...	1,600	2,004
Outstandings at close of 1873—74	50	...	iii. Contingencies	600	433
Value of stock at close of 1873—74	14,100	14,450	District Forest establishment ...	3,216	1,904
				12,604	11,200
Net Revenue.....	...	36,636	Total Expenditure.....	29,054	20,901

92. There were no sales of timber from the State Forests, no demand being made. The sandalwood of this Range is sold by the Assistant Conservator in Mysore, and as it was more expedient to get rid of the old wood in Mysore, Hassan wood was kept back, and but Rs. 33,672 realized, against an estimate of Rs. 38,400.

The short sales under District Forests have already been explained.

The total decrease in receipts was Rs. 15,058.

93. Under disbursements, owing to limited operations, there was a total saving of Rs. 6,749 under A. and under B. of Rs. 1,396. The difference in the value of stock at the beginning and close of the year being allowed for, the Range shews a net revenue of Rs. 36,636.

94. The two years' experiment of separating this Range from Mysore with which it was formerly incorporated closed on the 31st March 1874, and a full report of its working will be found in a separate communication.

95. Nundydroog Range.

Receipts.	Estimates.	Actuals.	Expenditure.	Estimates.	Actuals.
i. Sale of timber brought to depôts					
Timber	3,000	1,886	*A. Conservancy and Working.*		
Sandalwood	32,000	11,758			
vi. Sale of minor forest products ...	1,250	131	Timber	500	364
vii. Sale of confiscated drift and waif timber	100	...	Sandalwood	4,000	4,660
viii. Fines and forfeitures	100	...	ii. Purchase of tools	100	...
ix. Miscellaneous	1,000	1,147	iii. Feed and keep of cattle ...	600	...
Collections from District Forests...	28,100	26,648	vi. Plantations	12,000	14,388
			vii. Forest work	250	17
Total.....	65,550	41,510	viii Forest Survey	...	56
Deduct Expenditure.....	61,862	52,617	ix. Experiments to test the value of timber	50	...
			x. Communications	1,000	...
	3,688	*11,047	District Forest working charges ...	10,000	2,036
Add—			Total.....	28,500	21,521
Outstandings at close of 1873—74.	20,228	...			
Value of stock at do ...	400	20,628	*B. Establishment.*		
			i. Salaries	22,740	22,484
Deduct—			Deputation and special allowances....	...	24
			ii. Travelling allowances	3,300	3,415
Realizations on account of outstandings of 1872—73 ...	1,710	...	iii. Contingencies	950	1,523
Value of stock at close of 1872—73.	5,572	...	District Forest establishment ...	6,372	3,650
* Loss by Expenditure ...	11,047	18,329		33,362	31,096
Net Revenue.....	...	2,299	Total Expenditure...	61,862	52,617

96. To this Range is debited the salary of the Assistant Conservator in charge of the Accounts in the Conservator's Office; it is also charged with the salary of the Assistant Conservator in charge of the fuel plantations.

97. The Officer now in charge of the Range, Mr. Ludlow, was transferred from British Burmah in March 1873; Mr. Daly, a second Grade Assistant Conservator, was also sent over from Burmah in January 1874, and Mr. Hicks, Assistant Conservator, (over strength) and Mr. King, Sub-Assistant Conservator, are both employed in this Range. The work here is almost entirely conservancy. The more the jungles are inspected, the more urgent appears to be the need for conserving them, and the expenditure thus incurred, together with the charges for plantations, which cannot yield any returns yet, will keep the net revenue of this Range at a low figure for some years to come.

98. Under *receipts*, the main decrease is in sandalwood, owing to the late date of sale, Rs. 11,758 only were realized, out of a total sale of Rs. 31,349. The small realizations on minor forest products are unsatisfactory, and endeavours are being made to raise the revenue under this head.

99. Under *disbursements*, the excess expenditure in collection of sandalwood (Rs. 660,) and in plantations were met by sanctioned transfers. The unsatisfactory working of the District Forests has already been reported on. Under contingencies there was an excess over estimates of Rs. 573. The estimates would not have been worked up to, but for a payment of Rs. 720 for passage money for Mr. D. E. Hutchins, Assistant Conservator, which was repaid to the Madras Government.

100. *General Financial Results.*—The results of the year are now exhibited in the form ordered in letter No. 25—22 of 4th January 1873 from Government of India, Department of Revenue, Agriculture and Commerce.

	Rs.
Realizations	4,97,060
Deduct—	
Realized on account of transactions of previous periods.. .	5,818
Balance....	4,91,242
Add—	
Outstandings at close of the year	29,488
Value of year's transactions...	5,20,730
Disbursements	2,36,233
Deduct—	
On account of transactions of former years ..	0
Balance...	2,36,233
Add—	
Due for transactions during year under review not yet disbursed	0
Balance...	2,36,233
Value of year's transactions	5,20,730
Cost	2,36,233
Net Result of year's transactions...	2,84,497
Add—	
Net Difference of value of stock...	3212
Net Revenue...	2,87,709

GENERAL REMARKS.

101. *Avenues, Groves and Nurseries.*—As the information on these topics is not yet in from all the Districts, I am unable to embody it in my report. It will be sent in as an appendix when received, and put together.

102. *Inspection of the land round about Dodballapur with the view of afforesting it.*—The question of the fuel supply of Bangalore has already attracted notice, and as the jungles within 30 miles of the town are worked out, the supply of wood is brought in from forests still more remote. The Department has had handed over to it blocks

of land which have been closed to all cutting. The largest of these is at Handigundi Betta near Closepet, where fourteen square miles have been shut up. But as the land already enclosed does not by any means cover an area sufficient to grow enough wood fuel to meet the yearly increasing demand, a large tract of country roughly calculated to measure 400 square miles was carefully inspected near Dodballapur, about 30 to 35 miles north of Bangalore. There are but few villages in this tract, and the proposal having met with the approval of the Chief Commissioner, work will, it is hoped, be commenced during the current year. The tract has not yet been handed over to the Department by the Revenue authorities, and our operations have simply been limited to watching the tract to prevent the removal of wood for sale as fuel in Bangalore, and to stop the felling of young growing wood. The charges have been debited to District Forests. The frequent changes among the District Officers last year and in the early portion of the current year, and the pressure of other duties has hitherto been the cause of delay in the tract being made over to this Department.

103. *The Conservator's visit to Bombay.*—I visited Bombay on duty, by order, for the purpose of ascertaining, if possible, the state of the sandalwood market there. I left Bangalore on the 29th July and returned on the 21st August 1873, having travelled up to Surat, in the course of my enquiries, the results of which were reported in a separate communication in September last.

104. Mr. Ludlow, Assistant Conservator in Nundydroog, was deputed to visit Coorg, and report on the cardamom forests, with special reference to the falling off in the rents due by the lessees of the cardamom forests, who complained that they were unable to pay their dues, owing to the fall in the value of the spice and short crops. Mr. Ludlow was absent from 21st November 1873, to the 14th February 1874. The results of his visit were separately reported in the Coorg Department.

105. During 1873—74, four Officers of the Department passed the lower standard of examination in the Kanarese language. These were Mr. Macpherson, Mr. Ludlow, Mr. Jellicoe, and Mr. Dickinson.

106. In accordance with orders, the number and value of free grants of wood to ryots made during the year is now reported on.

In Nundydroog, 12 cart-loads of wood valued at Rs. 48 were given to six ryots in the Kengeri Taluk, whose houses had been destroyed by fire.

In Mysore, 31¾ cart-loads of jungle wood and 15½ cart-loads of bamboos were granted to the ryots of Haruve in the Periyapatna Taluk, and of Maliyur in Heggaddevankote Taluk, on the ground of distress occasioned by destruction of their houses by fire. The value of the wood at depôt rates was Rs. 235.

In Nagar there were four grants sanctioned by the Chief Commissioner, one of them being for the construction of a hobli school. In three of these instances, the ryots refused to agree to the terms laid down by the Chief Commissioner which were that the wood should be supplied at cost price. The grants were consequently not made. The fourth grant was made late in the year, and will be reported on in the report for 1874—75.

107. As ordered, I now close this report by stating the manner in which the Officers of the Department have worked.

108. Captain Jarrett, the Deputy Conservator, has worked well in the many duties he has had to carry out in the large Range entrusted to him, and in the introduction of the District-Forest scheme.

109. Mr. Macpherson has done well in every single matter intrusted to him, and I shall again this year bring forward his claims to promotion to the 1st grade.

110. Mr. Ludlow took charge of the Nundydroog Range in July 1873, and later in the year also assumed charge of the District Forests. He was a good deal hampered by the difficulties experienced in settling the accounts of the subordinates in the Range, which were handed over in confusion by the Officer who preceded him. This work was satisfactorily performed by Mr. Ludlow, and now that he has been a year in the Range, and made himself acquainted with the greater part of it, and especially those parts which will in future be looked to as the eventual sources of supply of wood fuel; the conservancy work, so urgently required in this Range, will be, I trust, put on a sound basis.

111. Mr. Hicks is employed under Mr. Ludlow, who now holds charge both of the Range and District Forest work.

112. Mr. Jellicoe was in charge of the Hassan Range. Owing to the claims to wooded land, made on all sides, he had peculiar difficulties to contend with in his District Forest work, which was not a success; he has however worked hard, and is well acquainted with the District.

113. Mr. Hutchins was throughout the year in the Conservator's Office, in charge of the accounts, and current work during the tours of the Conservator. He has been regular in the performance of his duties, and has lately been transferred to Hassan exchanging places with Mr. Jellicoe, in accordance with the orders of the Government of India which direct that young officers shall take office and out-door duties by turns. Mr. Hutchins did well in the Office.

114. Mr. Dickinson was throughout the year under the Deputy Conservator in Nagar, and had charge of the District Forests. He accompanied me, when I visited Nagar, in my tour through the Range, and I have every reason to endorse the report made by Captain Jarrett, that Mr. Dickinson is an energetic, hard-working and intelligent Officer.

115. Mr. W. King is still a Sub-Assistant Conservator. He was highly recommended last year for promotion, and the past year's work has added to his claims. He was in charge of the fuel plantations till the end of January 1874, when Mr. Daly, Assistant Conservator, relieved him, being his senior in the Department. Mr. King has now been upwards of four years in the Department as Sub-Assistant Conservator, and has in every way established a strong claim to promotion. I trust that the Government will ere long be able to bestow it on him.

G. J. VAN SOMEREN, *Captain*,
Conservator of Forests, Mysore and Coorg.

Government Series, No. 21.

MYSORE FOREST DEPARTMENT.

Annual Summary of Revenue and Expenditure for the year 1873—74.

Particulars.	Direction.	Nundydroog Range.	Nagar Range.	Mysore Range.	Hassan Range.	Total.	Remarks.
RECEIPTS.							
i. Sale of timber brought to Depôts ... Timber	...	1,886 0 9	43,501 12 4	9,423 4 1	... 0 0	54,816 1 2	
i. Sale of timber brought to Depôts ... Sandalwood	...	11,758 4 1	1,06,107 2 5	1,47,590 3 11	33,671 10 3	2,99,127 4 8	
ii. Do removed by purchasers	...	...	1,116 8 10	...	...	1,116 8 10	
iii. Duty on foreign timber	...	...	...	...			
iv. Permit fees, &c.	...	...	...	...			
v. Grazing dues	...	...	...	...			
vi. Sale of fruits, babul pods and other minor forest produce	...	130 12 0	6,084 9 7	1,833 0 0	1,981 6 0	15,927 12 10	
vii. Do confiscated, &c., timber	...	...	...	3,839 7 11			
viii. Fines and forfeitures	...	...	...	21 8 0			
ix. Miscellaneous receipts	...	1,146 10 6		890 6 10			
Collection from District Forests	...	26,648 6 1	59,318 8 8	32,616 7 8	7,488 15 11	1,26,072 6 4	
Total Receipts	...	41,570 1 5	2,16,128 9 10	1,96,219 6 5	43,142 0 2	4,97,060 1 10	
EXPENDITURE.							
A. Conservancy and Working.							
i. Timber expenses ... Timber	...	364 4 10	12,885 9 6	6,494 9 1	1 14 0	19,746 5 5	
i. Timber expenses ... Sandalwood	...	4,659 11 6	10,415 13 2	17,736 5 6	5,449 6 5	38,261 4 7	
ii. Purchase of tools, &c.	...	...	5 0 0	16 4 0	84 8 0	105 12 0	
iii. Feed and keep of cattle	...	...	260 0 7	315 13 9	... ...	575 14 4	
iv. Rent of leased forests	...	...	...	...	...	...	
v. Charges in collecting revenue of grass, &c.	...	...	...	100 0 0	26 14 0	126 14 0	
vi. Plantations	...	14,387 14 7	771 2 4	3,648 7 8	240 7 11	19,048 0 6	
vii. Forest works	...	17 0 2	...	471 5 4	... ...	488 5 6	
viii. Forest surveys	...	56 0 0	...	...	... ...	56 0 0	
ix. Experiments to test the value of timber.	...	...	96 0 0	...	... ...	96 0 0	
x. Communications and buildings	...	...	99 15 8	360 4 0	6 0 0	466 3 8	
District-forest working charges	...	2,036 7 10	15,785 0 2	11,775 7 0	3,892 9 2	33,489 8 2	
Total Working Charges	...	21,521 6 11	40,318 9 5	40,918 3 4	9,701 11 6	1,12,460 4 2	
B. Establishment.							
i. Salaries	15,542 1 4	22,483 21 5	23,977 10 10	14,634 4 0	6,858 12 6	83,496 8 1	
Deputation and special allowances	...	24 5 3	346 12 5	296 10 8	... ...	667 12 4	
ii. Travelling allowances	1,692 8 11	3,414 12 5	2,825 15 5	2,202 9 8	2,003 15 7	12,139 14 0	
iii. Contingencies	2,924 3 3	1,523 9 1	1,612 5 6	1,429 3 2	433 11 2	7,923 0 2	
District-forest establishment	...	3,649 2 10	9,324 2 2	4,668 10 6	1,903 11 10	19,545 11 4	
Total B, Establishment	20,158 13 6	31,095 9 0	38,086 14 4	23,231 6 0	11,200 3 1	1,23,772 13 11	
Total Expenditure	20,158 13 6	52,616 15 11	78,405 7 9	64,149 14 4	20,901 14 7	2,36,233 2 1	

Government Series, No. 22.

MYSORE FOREST DEPARTMENT.

Annual Abstract Account of the Cash Transactions of the Forest Department in Mysore, for the year 1873—74.

Cr. Dr.

Year.	Heads of Account.	Amount.	Year.	Heads of Account.	Amount.
1873—74.	To Cash Balance in hand on 31st March 1872	10,529 2 4	1873—74.	By Expenditure of the Department	2,36,233 2 1
	„ Revenue received	4,97,060 1 10		„ Remittances to State Treasuries	4,97,060 1 10
	„ Remittances from State Treasuries	2,36,200 0 1		„ Repayment of Advances	1,427 8 9
	„ Deposits	...		„ Remission of Advances	379 9 8
	„ Advances recovered	...		„ Refunds of Revenue	...
				„ Balance outstanding on 31st March 1874	8,688 13 11
	Total Rs.	7,43,789 4 3		Total Rs.	7,43,789 4 3

Government Series, No. 23.

MYSORE FOREST DEPARTMENT.

Annual Statement of Outstandings and Liabilities of the Department on account of Contractors and Disbursers for the year 1873—74.

Divisions.	Departmental Debtor.			Departmental Creditor.			Balance due—		Remarks.
	At the Commencement of the year.	Recoveries in cash and in work done during the year.	At the Close of the year.	At the Commencement of the year.	Payments made during the year.	At Close of the year.	To Department Outstandings.	By Department Liabilities.	
Nundydroog...	...	22,061 5 8	22,061 5 8	2,748 3 0	21,831 0 0	24,579 3 0	2,517 13 4	...	
Nagar ...	...	40,554 10 0	40,554 10 0	4,184 3 5	38,733 15 11	42,918 3 4	2,363 9 4	...	
Mysore ...	...	41,784 12 4	41,784 12 4	2,473 6 5	41,405 0 1	43,878 7 0	2,093 10 8	...	
Hassan ...	...	9,866 10 7	9,866 10 7	1,123 5 6	10,457 1 8	11,580 7 2	1,713 12 7	...	
Total ..	...	1,14,267 6 7	1,14,267 6 7	10,529 2 4	1,12,427 2 2	1,22,956 4 6	8,688 13 11	...	

Government Series, No. 28.

MYSORE FOREST DEPARTMENT.

Annual Account of Forest Revenue for 1873—74.

Receipts.	Amount.	Disbursements.	Amount.
Amount of revenue realized in 1873—74.	4,97,060 1 10	Amount disbursed in 1873—74	2,36,253 2 1
Deduct amount realized on account of previous periods...	5,818 6 3	Deduct amount disbursed on account of transactions of former periods	...
Balance	4,91,241 11 7	Balance.....	2,36,233 2 1
Add outstandings on account of the year	29,487 9 3	Add amount due for transactions during the year under review but not yet disbursed	...
Value of the year's transactions	5,20,729 4 10	Real cost of the year's transactions	2,36,233 2 1

Value of the year's transactions	5,20,729	4 10
Cost of the year's transactions	2,36,233	2 1
Balance.....	2,84,496	2 9
Add difference between the value of stock at the commencement and close of the year	3,212	0 0
Net Results of the year.....	2,87,708	2 9

Besides the above, the value of stock remaining at District Forest Depôts amounts to Rs. 24,410, the stock being valued at lower rates than at large depôts as the wood is small.

CONSERVATOR OF FORESTS' OFFICE, MYSORE AND COORG,
BANGALORE, 31*st August* 1874.

G. J. VAN SOMEREN, *Captain,*
Conservator of Forests, Mysore and Coorg.

Stock Account of Quantities and Value of Timber and other Forest Produce on hand at the commencement and close of the year 873—74.

Description.	In Depôt on 1st April 1873.		Add received during 1873—74.		Deduct issued or sold during 1873—74.					Remaining in Stock on 31st March 1874.		Remarks.
	Quantity.	Probable Value.	Quantity.	Probable Value.	Quantity.	Probable Value.	Amount realized.	Difference. Profit.	Difference. Loss.	Quantity.	Probable Value.	
Timber.												
Nagar Range ... Teak	818	10,634 0 0	444	5,772 0 0	788	9,984 0 0	11,514 9 6	1,530 9 6	...	494	6,422 0 0	
Nagar Range ... Blackwood	28	280 0 0	25	250 0 0	53	530 0 0	75 15 3	...	454 0 9	...	... 0 0	
Nagar Range ... Junglewood	3,565	35,650 0 0	1,166	11,660 0 0	3,492	34,920 0 0	28,239 8 0	...	6,680 8 0	1,239	12,390 0 0	
Nagar Range ... Teak and Junglewood Poles	1,713	1,713 0 0	824	824 0 0	2,144	2,144 0 0	1,929 8 5	...	214 7 7	393	393 0 0	
Nagar Range ... Bamboos	...	... ...	256	5 0 0	254	5 0 0	7 4 0	2 4 0	...	2	... 0 ...	
Total	6,124	48,277 0 0	2,715	18,511 0 0	6,711	47,583 0 0	41,766 13 2	1,532 13 6	7,349 0 4	2,128	19,205 0 0	
Mysore Range ... Teak	1,347	17,511 0 0	62	806 0 0	155	2,015 0 0	1,210 13 7	... 0	804 2 5	1,254	16,302 0 0	
Mysore Range ... Blackwood	33	330 0 0	...	... ...	14	140 0 0	486 15 4	346 15 4	...	19	190 0 0	
Mysore Range ... Junglewood	955	9,550 0 0	83	830 0 0	291	2,910 0 0	5,392 12 10	2,482 12 10	...	747	7,470 0 0	
Mysore Range ... Teak Poles	171	171 0 0	...	... ...	170	170 0 0	185 12 0	15 12 0	...	1	1 0 0	
Mysore Range ... Bamboos	938	18 0 0	216	4 0 0	276	5 0 0	44 11 0	39 11 0	...	878	17 0 0	
Total	3,444	27,580 0 0	361	1,640 0 0	906	5,240 0 0	7,321 0 9	2,885 3 2	804 2 5	2,899	23,980 0 0	
Nundydroog Range ... Junglewood	36	360 0 0	...	... ...	...	... ...	.. ...	... ...	... ...	36	360 0 0	
Nundydroog Range ... Bamboos	3,027	60 0 0	4,164	80 0 0	5,067	100 0 0	299 7 8	199 7 8	...	2,124	40 0 0	
Total	3,063	420 0 0	4,164	80 0 0	5,067	100 0 0	299 7 8	199 7 8	...	2,160	400 0 0	
Total Timber	12,631	76,277 0 0	7,240	20,231 0 0	12,684	52,923 0 0	49,287 5 7	4,617 8 4	8,153 2 9	7,187	43,585 0 0	
Sandalwood.												
Nagar Range ... Good wood	43	13,760 0 0	236	75,520 0 0	267	85,440 0 0	1,05,450 5 0	20,010 5 0	...	12	3,840 0 0	
Nagar Range ... Inferior wood	25	800 0 0	65	2,080 0 0	69	2,208 0 0	673 14 5	...	1,554 1 7	21	672 0 0	
Mysore Range ... Good wood	252	74,240 0 0	522½	1,67,200 0 0	410½	1,31,360 0 0	1,47,442 5 2	16,082 5 2	...	344	1,10,080 0 0	
Mysore Range ... Inferior wood	11	352 0 0	30	960 0 0	3	96 0 0	6 4 0	...	89 12 0	38	1,216 0 0	
Hassan Range ... Good wood	...	... 0 0	100	32,000 0 0	56	17,920 0 0	33,242 15 10	15,322 15 10	...	44	14,080 0 0	
Hassan Range ... Inferior wood	...	... 0 0	53	1,696 0 0	43	1,376 0 0	424 9 6	...	951 6 6	10	320 0 0	
Nundydroog Range ... Good wood	15	4,800 0 0	89½	28,640 0 0	104½	33,440 0 0	31,349 1 9	...	2,090 14 3	...	... 0 0	
Nundydroog Range ... Inferior wood	11	352 0 0	12	384 0 0	23	736 0 0	164 11 0	...	571 5 0	...	... 0 0	
Total Sandalwood	357	94,304 0 0	1,108	3,08,480 0 0	976	2,72,576 0 0	3,18,734 2 8	51,415 10 0	5,257 7 4	469	1,30,208 0 0	
Grand Total	12,968	1,70,581 0 0	8,348	3,28,711 0 0	13,660	3,25,499 0 0	3,68,121 8 3	56,033 2 4	13,410 10 1	7,656	1,73,793 0 0	

CONSERVATOR OF FORESTS' OFFICE,
MYSORE AND COORG,
Bangalore, 31st August 1874.

G. J. VAN SOMEREN, *Captain,*
Conservator of Forests, Mysore & Coorg.

Statement shewing Expenditure incurred on account of Plantations in Mysore up to the close of official year 1873—74.

Division.	Names of Plantations.	Previous area planted.	Area planted in 1872—73.	Area planted in 1873—74.	Total area planted.	Previous cost of formation and maintenance.	Cost of formation and maintenance on area planted in 1872—73.	Cost of formation on area planted in 1873—74.	Total cost of formation and maintenance on the whole area planted.	Amount realized on crops in previous years.	Amount realized on crops in 1872—73.	Amount realized on crops in 1873—74.	Total amount realized on crops.	Total net cost of area planted, formation and maintenance.	Average cost per acre for formation, &c. In previous years	Average cost per acre for formation, &c. In 1873—74.	Average cost per acre for formation in 1873—74.	Average cost per acre for formation and maintenance on whole area planted.
Mysore. Nagar.	Lakvalli (Teak)	15	...	...	15	805 0 0	58 0 0	13 0 0	876 0 0	...	...	...	...	876 0 0	...	...	...	58 6 4
	Sakrebail	30	...	...	30	2,409 0 0	134 0 0	361 0 0	2,904 0 0	...	...	...	...	2,904 0 0	...	...	...	96 12 9
	Hebbi	3	6½	...	9½	230 0 0	475 0 0	196 0 0	901 0 0	...	...	...	...	901 0 0	...	...	...	97 6 6
	Alkal (Sandal)...	71	...	...	71	702 0 0	33 0 0	4 0 0	739 0 0	...	...	...	...	739 0 0	...	...	...	10 6 6
	Anapankatte	237	...	...	237	543 0 0	16 0 0	58 0 0	617 0 0	...	...	...	...	617 0 0	...	...	...	2 9 7
	Santaveri (exotic)	4½	...	...	4½	726 0 0	170 0 0	136 0 0	1,032 0 0	...	...	...	...	1,032 0 0	...	...	...	242 13 2
	Kakankote (Teak)	...	53	40	93	462 0 0	1,827 0 0	2,357 0 0	4,646 0 0	...	76 7 4	...	76 7 4	4,646 0 0	...	...	...	49 15 3
	Ganagur (Sandal)	...	30	25	55	408 0 0	770 0 0	1,128 0 0	2,304 0 0	...	...	35 8 0	35 8 0	2,304 0 0	...	...	...	41 14 3
	Karepur	...	5	...	5	...	202 0 0	...	202 0 0	...	...	...	...	202 0 0	...	...	...	40 0 0
	Seeds, &c.	...	...	...	...	...	...	163 0 0	163 0 0	...	...	...	...	163 0 0	...	...	...	...
Nundydroog.	Kumbarhalli (Timber)	40	66	71	177	1,117 0 0	1,639 0 0	2,190 0 0	4,946 0 0					4,946 0 0				27 15 1
	Maddagiri	...	25	...	25	... 0 0	334 0 0	689 0 0	1,023 0 0					1,023 0 0				40 14 9
	Chota and Bara Hosharidi (fuel) ...	15	46	65	126	2,360 0 0	1,471 0 0	2,367 0 0	6,198 0 0					6,198 0 0				49 3 0
	Jadiganhalli	20	15	17½	52½	992 0 0	592 0 0	706 0 0	2,290 0 0					2,290 0 0				44 0 7
	Nellal	...	32	48	80	204 0 0	717 0 0	1,384 0 0	2,305 0 0					2,305 0 0				28 13 1
	Kadgodi	...	10	33	43	... 0 0	521 0 0	1,029 0 0	1,550 0 0					1,550 0 0				36 0 8
	Kumalgod	...	25	35	60	2,247 0 0	1,269 0 0	1,546 0 0	5,062 0 0					5,062 0 0				84 5 10
	Kurandhalli	118	3	10	131	754 0 0	373 0 0	493 0 0	1,620 0 0					1,620 0 0				12 15 10
	Karpanhalli	9	4	40	53	537 0 0	442 0 0	1,206 0 0	2,185 0 0			174 15 10	174 15 10	2,185 0 0				41 3 7
	Marsandra	15	44	30	89	1,114 0 0	537 0 0	968 0 0	2,669 0 0					2,669 0 0				29 15 10
	Appasandra	46	21	36	103	1,501 0 0	630 0 0	1,009 0 0	3,140 0 0					3,140 0 0				30 7 9
	Hennur	...	...	...	...	... 0 0	... 0 0	101 0 0	101 0 0					101 0 0				... ...
	Nundydroog (avenue)	...	...	...	...	... 0 0	301 0 0	23 0 0	324 0 0					324 0 0				... ...
	Supervising Establishment in Nundydroog Range	...	...	...	...	... 0 0	334 0 0	389 0 0	723 0 0					723 0 0				... ...
	Collection of seeds and sundry charges ...	...	...	...	...	... 0 0	2,670 0 0	287 0 0	2,957 0 0					2,957 0 0				... ...
	Total.....	623¼	385½	450½	1,459	17,109 0 0	15,565 0 0	18,803 0 0	51,477 0 0	...	76 7 4	210 7 10	286 15 2	51,477 0 0	...	...	...	... ...

CONSERVATOR OF FORESTS' OFFICE,
MYSORE AND COORG,
Bangalore, 31*st August* 1874.

G. J. VAN SOMEREN, *Captain*,
Conservator of Forests, Mysore and Coorg.

PROGRESS REPORT

OF

FOREST ADMINISTRATION

IN THE

PROVINCE OF MYSORE,

1873—74.

By CAPTAIN G. J. VAN SOMEREN,
CONSERVATOR OF FORESTS.

REVIEW BY THE CHIEF COMMISSIONER,

No. 4967—Rev.—For. 324, 7th October 1874.

---

1. The Report has been prepared by the Conservator, Captain van Someren.

INTRODUCTORY.

LEGISLATIVE.

2. The revised rules for the sale of timber by auction, issued during the past year, do not differ in any material respect from those for which they were substituted.

SPECIAL.

HEAD I.—STATE FORESTS.

FIRST SECTION.

3. No new State Forests were established during the year; but by the completion of sketch maps of some of the Reserved Forests in the Mysore Range (shewing simply areas) the total area of the State Forests was found to be 449½ square miles, instead of 464¼ as previously estimated. This does not include certain forest lands taken over in Nagar, but not yet proclaimed as State Forests, the addition of which, with the correction noted above, will result in an increase to the reserved forest area of 130 square miles and a nominal decrease of 21.

4. The demarcation during the year was limited to 4 miles of new demarcation, and 20¾ miles of clearance of old lines in the Mysore Range.

SECOND SECTION.

5. The requirements of the people in the matter of wood appears to have been duly considered.

THIRD SECTION.

PROTECTION OF THE FORESTS.

6. There were 151 cases of breaches of the Forest Rules against 372 in 1872—73, the number of persons implicated being 699. In 118 cases, the accused, involving 531 persons, were convicted, while 9 cases remain still pending. When compared with the returns of the preceding years the proportion of convictions to prosecutions is creditable, and evinces a closer and more watchful supervision.

FOURTH SECTION.

IMPROVEMENT AND EXTENSION OF THE FORESTS.

7. On the whole, the progress under this head, as gathered from the report, has been fair. No time should however be lost in completing unfinished demarcations of all tracts taken up for forest purposes.

8. *Roads.*—The progress made in the clearing and opening out of roads was limited to 19 miles in Hassan, and some petty repairs to existing tracts in Mysore.

PLANTATIONS.

9. The plantations shewn in the tabular form under this head comprise 4 teaks, 2 timber, 10 fuel, and 4 sandal, one of which the Karepur was abandoned as being too small for the purpose. The planted area added to these plantations during the year was 450½ acres, and their total planted area at the close of the year was 1,450 acres. The total amount expended during the year was Rs. 17,840, as against Rs. 15,565 in 1872—73, and the total expenditure on these plantations, since their formation to the end of 1873—74, is shewn to have amounted to Rs. 47,209.

10. The condition of the 4 teak plantations appears to have been fairly satisfactory, but only one of them, Kakankote, was extended during the year, and it suffered serious injury from the inroads of wild elephants.

The scarcity of labor, referred to by Mr. Macpherson, in connection with this plantation must no doubt seriously obstruct the measures proposed to be taken for its extension, but it is hoped that, with patience and good arrangements, this difficulty will be surmounted.

The Keddah operations will probably relieve the neighbourhood from the presence of wild elephants.

11. The progress in the two timber plantations consisted of 91 acres of newly planted land, but it is stated that a considerable portion of that planted in 1871 will have to be gone over again.

12. The results of the sandalwood sowings during the year were not generally successful, owing, it is stated, to the want of rain. Some of the seedlings of 1872—73 appear however to have thriven, and every possible attention must be given to the successful raising of this valuable tree, the various experiments with which object should be carefully watched. The fresh block of land recently taken up between Bettadpur and Fraserpet, but not yet brought on the list of reserved forests, should be profitably utilized without unnecessary delay for raising sandal.

13. The 10 fuel plantations appear to have made on the whole fair progress during the past year, and give promise of doing well.

14. The exotic's plantation at Santaveri appears unlikely to succeed, the climate being clearly unsuitable to the foreign trees planted in it.

15. Paras 35 to 48 of the report enter at some length into the system of planting and sowing adopted by the Department, and the reasons which have led the Conservator to employ "pitting," regarding the cost of which the Government of India has directed an enquiry to be instituted. The Conservator is strongly in favor of the "big pit" system, which he thinks best suited to the country, but which can only be fairly decided by experience. The operations on this head described appear to have been judicious and merit a fair trial. The average cost of planting in big pits is computed at 32 rupees per acre, but it is anticipated that it can be reduced to Rs. 27 per acre, which would be moderate when compared with the cost elsewhere.

There can be little doubt as to the suitableness of the system for timber plantations, but the cost must always be probably excessive for the re-generation of ordinary jungle and fuel tracts.

The establishment or extension of bamboo jungles should be systematically attended to wherever such is practicable in the Maidan country especially, and something might be done with this object in all reserved forest and fuel tracts.

FIFTH SECTION.

ACTUAL YIELD OF THE FORESTS, DISPOSAL OF TIMBER, &c.

16. In the Nagar Range the fellings amounted to 920 teak, 1,039 jungle logs and 202 teak poles. The amount realized at sales was more than in the previous year, being Rs. 41,766—13—2, against Rs. 24,692 in 1872—73, which was due to a much larger quantity of junglewood having been sold, though the rates realized were lower than in the previous year. The collections of sandalwood amounted to 235½ tons of good and 65 tons of inferior wood. The cost per ton was Rs. 34—9—7, against rupees 28—4—3 in the preceding year. The sales aggregated 267 tons of good and 69¾ tons of inferior wood, the rates realized being Rs. 394—15—0 and Rs. 9—6—0 respectively, as contrasted with Rs. 373 and Rs. 15 per ton in 1872—73. The total realizations were Rs. 1,06,104, against Rs. 1,18,348 in 1872—73, the difference being due to larger sales in 1872—73.

17. In the Mysore Range, felling was restricted, owing to the market being overstocked with large quantities of wood imported by private enterprize from Madras remaining unsold. The sales at the depôts, which were very small, realized only Rs. 8,707, against Rs. 39,073 in 1872—73. Wood valued at Rs. 4,599 was supplied to the Guardian to His Highness the Maharaj for Palace purposes. It does not appear in the account of sales.

The collection of sandalwood, including old rates, &c., amounted to 522½ tons of good and 30 tons of inferior wood at an average cost of Rs. 32—1—7 per ton, or Rs. 7—0—5 less than in 1872—73. The aggregate quantity sold was 350 tons of good and 53 tons of inferior wood, which realized an average of Rs. 416—14—1 and Rs. 30—4—1 per ton respectively, as contrasted with Rs. 396—5—7 and Rs. 22—5—8 in the previous year. The total amount realized by sales was Rs. 1,47,515, against Rs. 57,891 in 1872—73. The collection and sale of old dead wood and roots was good. The rates obtained were also good.

18. In the Hassan Range there was no sale of timber. The collections of sandalwood were 100 tons good wood and 53 tons inferior, the cost per ton being Rs. 35—9—8 against Rs. 51—11—4 in 1872-73. The sales were 56 tons of good and 43 tons of inferior wood, the average rates realized being Rs. 593—10—0 per ton for good and Rs. 9—13—9 for inferior wood respectively, as contrasted with Rs. 439—8—0 and Rs. 19—4—0 in 1872-73. The total amount realized was Rs. 33,667.

It is satisfactory to note that the fellings were limited to dead or dying trees. The collection of old roots in this District should not be delayed.

19. In the Nundydroog Range there were no fellings of timber, and the actual sales at depôts were not quite ⅔rds of estimates, and consisted of bamboos only. The collections of sandalwood aggregated 89½ tons of good and 12 tons inferior wood. The sales consisted of 10,472 tons of good and 23 tons of inferior wood, and realized an average of Rs. 300 and Rs. 7—2—6 per ton respectively, as against Rs. 328 and Rs. 3—5—0 in the previous year.

The cost of collection was Rs. 45—14—6 per ton, against Rs. 37—13—6 in 1872—73. The low rate obtained is ascribed chiefly to the late date of sale, the cause of which has not been explained. It is not creditable that head-quarters of the Depart-

ment should again shew mis-arrangement or mis-management in the sales of sandalwood involving a serious loss to Government, and it is expected that the Conservator will take such measures as are required to prevent a recurrence of anything of the sort.

The normal low rates realized for this valuable timber at Bangalore appear to call for special enquiry, and the Conservator should satisfy himself that there is adequate reason therefor.

20. The order limiting the sale of sandalwood to 500 tons annually having been cancelled, a large quantity of old wood and roots was collected and sold during the past year, the total sales aggregating 777½ tons of good and 188¾ tons of inferior wood. Excepting in the Nundydroog Range the rates realized were very satisfactory.

DISTRICT FORESTS.

21. During the year 29 depôts were opened for the sale of wood, 3 in Mysore. 22 in Nagar and 4 in Hassan. In the Nundydroog Division none were established, owing to the continuance of the license system in that Range.

22. The receipts were estimated at Rs. 74,000, but the actual sales at the depôts of small wood and bamboos under the District-Forest scheme were only Rs. 53,144, shewing a deficit of Rs. 20,856, which is attributed to the restriction of the sales at the depôts chiefly owing to the continuance of the license system in Nundydroog, where the introduction of the depôt system was unsatisfactorily carried out.

The stock in hand at the depôts at the close of the year was however of the value of Rs. 24,410, which, added to the amount realized by sales, gives a total of Rs. 77,554, against an expenditure of Rs. 53,034, leaving a net surplus of Rs. 24,520 which the Conservator shews is Rs. 5,236 in excess of the average annual receipts from sales of wood on license between 1868—69 and 1872—73, when no expenditure was incurred, but there was great waste and theft in the forest. Allowing for the possible deterioration of the stock in hand, he considers that the net surplus may be put down at Rs. 20,000, which is still in excess of the previous five years' annual average.

23. The private sales of wood are stated to have seriously interfered with the financial success of the depôt scheme, especially in Hassan, where only Rs. 2,143 were realized against Rs. 12,000 estimated, and also in Nundydroog, where the sale of wood from inam lands and from the Madras frontier has largely increased since the forests were partially closed. Notwithstanding these and other drawbacks the scheme has worked steadily in portions of the Province, and the Conservator is sanguine of its ultimate success.

24. The relief afforded to the public forests and jungles by the stocking of the markets in Hassan and Nundydroog with supplies of wood from private sources, is not a matter of serious complaint or regret. The chief object of the District-Forest scheme is to economize the working of the public jungles and to introduce into them a system of general conservation, which will, it is hoped, in time greatly increase their value and usefulness. The measures taken with this object could hardly do otherwise, *at first*, than involve some loss of revenue and some inconvenience to the public. It is shewn that the former has not as yet really occurred, and the effects of the latter cannot but be greatly mitigated by the offer for sale of stocks of wood from private sources, which it may be hoped will continue at least till the overworked or denuded jungles have recovered from the wasteful system to which their exhaustion is due. There can too be no doubt that the encouragement that is now given to the general growth of wood by private parties all over the Province cannot but ultimately greatly reduce the demand on the public jungles that has hitherto pressed on them so detrimentally.

GENERAL.

HEAD I.—FINANCIAL RESULTS.

25. Abstract details of the financial results in each Range are given in paras 79 to 99 of the report.

The general financial results of the year are shewn as follows :—

		Rs.
Realizations		4,97,060
Deduct—Realized on account of transactions of previous periods ...		5,818
	Balance...	4,91,242
Add—Outstandings at the close of the year		29,488
	Value of year's transactions...	5,20,730
Disbursements		2,36,233
Deduct—On account of transactions of former years		0
	Balance...	2,36,233
Add—Due for transactions during year under review not yet disbursed		0
	Value of year's transactions...	5,20,730
	Cost	2,36,233
	Net Result of year's transactions...	2,84,497
Add—Net difference of value of stock		3,212
	Net Revenue...	2,87,709

shewing an increase on the estimated surplus of Rs. 1,44,739 and of Rs. 95,146 on the net revenue of the previous year, which was wholly due to the larger sales of sandalwood.

The outlay of the year was considerably within the sanctioned grant.

26. The realizations from the sale of timber were Rs. 25,000 below the estimated amount, while those from sandalwood were nearly Rs. 1,13,000 higher. The causes of the difference in both cases is explained in the report. The value of wood supplied to the Palace, *viz.*, Rs. 4,599, is not shewn in the cash account.

27. The receipts from minor forest produce appear to have almost wholly dwindled away. The subject has been noticed in previous Reviews of the Annual Forest Reports, and it demands close enquiry, as this item should have shewn a steady increase, instead of an almost entire falling off. The Conservator will report fully on this question, shewing the receipts in each Range during the last five years, and the measures in force for realizing this part of the Forest revenue. He will also state what has been and can be done towards realizing a revenue from grazing dues.

GENERAL REMARKS.

28. The information promised in para 101 of the report, regarding avenues, groves and nurseries, will be awaited.

29. The contemplated operations with the object of afforesting certain lands in the vicinity of Bangalore, as a source of wood-supply for the town and station of Bangalore, where the demand for fuel has greatly increased, are judicious, and endeavours should be made to effect all necessary arrangements in connection therewith at once.

30. The free grants of wood to ryots and others during the year call for no special remark. The cases alluded to were duly considered before the concessions were authorized.

31. The Conservator's commendation of the good services of the several Officers named by him is noticed with satisfaction. Mr. Stevens' useful exertions in collecting sandalwood in the Hassan Range, referred to in para 62 of the report, should be borne in mind, and Captain van Someren himself is entitled to my acknowledgements for his labors during the past year.

R. J. MEADE,
Chief Commissioner.

BANGALORE, *6th October* 1874.

No. 222, dated the 25th February 1875.

From—G. H. M. BATTEN, Esq., *Officiating Secretary to the Government of India,*

To—The Chief Commissioner of Mysore.

I AM directed to acknowledge the receipt of your letter No. 5089-102F., dated 13th October last, forwarding the annual report of the forest Department for 1873-74, and to communicate the following observations and orders thereon.

2. The aggregate area of the State forests in Mysore at the close of the year is reported to be 449¼ square miles, which is 1·6 per cent. of the total area of the province, *viz.*, 28,500 square miles. This is a very small proportion, which will certainly not suffice to meet the requirements of the country when the rest of the waste lands in the province are denuded. It is satisfactory to observe from paragraph 102 of the report and paragraph 29 of your review that there is every prospect of there being a considerable increase in the area of the reserves in the vicinity of Bangalore, with the view of increasing the supply of fuel for that town. Under present circumstances however this is not the main question which should occupy the attention of the Forest Department, for when the necessity arises, the Maharaja will be at liberty to increase the area of the State Forests. The question which should now receive prominent attention is that of placing the existing State forests and plantations in as satisfactory a condition as possible, so that by the time they are handed over to the Government of His Highness their productive powers may have become improved, and a good but simple and easily intelligible system of protection and management may have been introduced, capable of being continued with success by a staff of native forest officers.

3. The care of the district forests which are not demarcated is of secondary importance, and as there are only six years left in which to place the demarcated reserves and plantations on a satisfactory footing, all the energies of the Department should mainly be concentrated upon them.

4. It would be well also to simplify to the utmost the system of estimates, accounts and returns connected with these operations, and the Conservator of Forests should be asked to consider how the orders of the Government of India, dated 15th January 1874, prescribing the manner in which the budget estimates of the Forest Department are to be prepared, may be modified with this object.

5. It is very satisfactory and creditable to the Conservator that the reserves are not all in the moist western zone (the Malnád), or what may be called the forest belt of Mysore, but that a considerable portion is on the dry hills of the Nundydroog Division, and that in these he has been most successful in protection and the exclusion of fires. I am to request that in his next report Captain Vansomeren may be asked to give a brief account of the condition of each reserve, and to state what his proposals are in regard to its treatment. The statement given in the 3rd paragraph of his present report would be more useful if the forest division and civil district in which each reserve is situated were mentioned. This was done in the statement given in paragraph 65 of his report for 1869-70, and the form of that statement, as far as the first four columns are concerned, should be maintained.

6. From paragraph 6 of the report for 1873-74 it is gathered that the boundaries of all the reserves are demarcated throughout by cleared lines. It would be well however in next year's report to mention the exact condition in which these boundaries are.

7. The protection of the reserves from fire is another subject to which the Conservator should devote all his resources during the next few years, and I am to suggest that he might be permitted to visit the Bori forests and other protected tracts in the Central Provinces, and ascertain the system which is pursued there. The circumstances of the western forests of Mysore in regard to fire conservancy are not more difficult than those of the Central Provinces, and Captain Vansomeren will find that success in this direction can be attained by a system of good management. As the full amount of expenditure estimated for in the budget estimate of 1875-76 has been admitted, it is hoped

that funds will be made available (if necessary by transfers from other heads) for successfully securing the protection of the forests. I am to request that in future annual reports a statement may be inserted shewing all the forest tracts from which fires have been excluded.

8. I am also to request that particular attention may be directed to the regulation of fellings in the reserves. It is satisfactory to notice from paragraphs 50 to 55 of the report that the felling of teak has been restricted to a small quantity, especially in Mysore; and the rule during the next five or six years should certainly be to cut as little teak as possible. It is not of much consequence whether the Mysore forests during the remaining six years of British tenure yield a larger or smaller surplus, and every teak tree felled diminishes the reproduction of this valuable tree. It is of course necessary to provide employment for the Korumbers who inhabit the forests, but this can be done by employing them on works of fire conservancy in a manner more useful for the improvement of the forests than in felling timber. It is necessary that a complete record should be kept of all the trees felled in each forest, with full information as to the number of logs obtained and their cubical contents; and this should be embodied in the report in one clear statement, and not as at present in a number of small detached statements which do not furnish the information most wanted, *viz.*, how many trees have been felled, where they were situated, and why they were cut. On the other hand, every effort should be made to clear the forest of dead trees and dry wood, as far as this can be done without undue expense.

9. From a statement given in paragraph 12 of the report it is observed that plantations have been formed in 19 different places, the aggregate area of which (excluding a small plot of 5 acres abandoned in Karepur) is 1,454 acres. The amounts expended upon these plantations do not however agree with the figures given in the separate statement appended to the report, though the areas given in these two statements correspond.

10. The teak plantation of Sakrebail, 30 acres in extent, is believed to be a plantation of some standing. I am to request that in next year's report a brief account of it may be given, shewing whether in any part of it the trees have closed overhead and kept down the weeds. The Conservator should also consider whether it will not be preferable to interplant the teak with bamboos, or some evergreen shrub, so as to obviate the necessity of continual weeding.

11. The report of progress in the Kamburhalli plantation in the Devaraydurga reserve is very satisfactory. This forest, part of which was protected by Colonel Dobbs (formerly Superintendent of the Nundydroog Division) some time before the formation of the Forest Department, will afford practical evidence of the good results attained by forest conservancy under the administration of the British Government.

12. The partial success of sandalwood cultivation in the Gurapur reserve is also satisfactory, and the Conservator's proposal to maintain it, and to endeavour to stock it more completely by dibbling in seed, is approved. It is also noticed with satisfaction that a more promising locality further west near Fraserpett has been selected in which it is proposed to plant sandalwood trees.

13. The Governor General in Council agrees with you that fair progress has been made in the fuel plantations. These are operations of the greatest importance for providing a supply of fuel to the railway as well as to the town of Bangalore, and the only matter for regret is that larger areas and better soil are not available there for this purpose.

14. In paragraphs 35 to 49 of the report, the Conservator furnishes the explanation in regard to the system of planting and sowing pursued by him in the Nundydroog fuel plantations, which was called for in paragraph 6 of the orders of the Government of India on the report for 1872-73. I am to state that His Excellency in Council agrees with you in thinking that experience alone can decide the merits of the system, and that the Conservator's arrangements in this respect appear to be judicious.

15. His Excellency in Council also agrees with you in the remarks made in paragraph 24 of your review, regarding the working of the district forest scheme. As far as the management of these forests tends to economize the resources of the Government woodlands which are not included in the reserves, it is advantageous, but such remarks as those made in paragraph 16 of the

report where Mr. Macpherson, the Assistant Conservator of Forests, ascribes part of the failure in the Kakenkote plantations to the fact that the district forest scheme occupies a large portion of his time, and passages of a similar nature in this and previous reports, indicate that the work thereby thrown upon the forest officers is heavy, and may possibly interfere with their more important duties connected with the protection and improvement of the reserves.

16. I am directed to notice that a very large amount of sandalwood seems to have been collected during the year, *viz.* :—

	Good.	Inferior.
Mysore	522½	30 tons.
Nagar	235½	65 „
Nundydroog	100	53 „
Hassan	89½	12 „
Total ...	947½	160 tons.

According to paragraph 50 of the memorandum appended to the report for 1872-73, the average outturn during the eight years from 1864-65 to 1871-72 was :—

	Tons.
Nagar	258
Nundydroog	114
Ashtagram ... {Mysore / Hassan}	226
Total ...	598

17. In paragraph 65 of the report the Conservator states that the orders of the Government of India restricting the collection and sale of sandalwood to 500 tons per annum have been cancelled. I am directed to say that there must be some misapprehension on this subject. In your letter No. 3487-72R., dated 29th September 1873, an application was made to increase the limit from 500 to 700 tons, but in the reply to that letter No. 1257, dated 30th October 1873, it was nowhere said that the limit of 500 tons was to be modified.

In paragraph 7 of the orders on the Forest Report for 1872-73,* and in paragraph 3 of the orders on the Budget Estimate for 1874-75,† it was said that there was "no desire to restrict the quantity of sandalwood to be sold, provided that growing material is not cut as long as a stock of mature old and deteriorating sandalwood can be brought to market." It is possible that this remark has been misunderstood, for wood may be *growing* and yet be *mature*. But the greatest care is necessary to prevent the exhaustion of sandalwood in Mysore at the present time, and I am accordingly directed to commend this subject to your careful consideration. The Governor General in Council is willing that dry and dead wood, and hollow, unsound or otherwise deteriorating trees should be cut, and roots dug out without limit, but *growing* trees, whether *young* or *mature*, should be cut most sparingly, and no trees which are not mature should on any account be felled. In the absence however of any exact data as to the annual outturn of the forests, the limit fixed by the Government of India should be maintained, and the collection and sale of sandalwood from growing trees should not exceed 500 tons per annum.

* No. 1331 of 15th November 1873.
† „ 13 of 5th January 1874.

18. I am to request that the Conservator of Forests may be directed to furnish you with separate returns shewing the quantities of this wood which have been collected and sold, in order that you may be able to control the outturn; and that in his next report he may be requested to furnish a statement shewing the total quantities collected in 1873-74, 1874-75, and proposed to be collected in 1875-76, with full and detailed information shewing what quantity of dead and dry wood was collected, and what quantity of roots; also how many hollow, unsound or otherwise deteriorating trees were removed, and how many sound and mature trees were felled. From the Budget Estimate of 1875-76, it is understood that during that year it is proposed to collect only dry wood and roots, and it is only on that understanding that the collection of so large a quantity as 806 tons has been permitted.

19. From paragraph 17 of the report it is observed that one of the four forest divisions in Mysore, *viz.*, the Hassan Division, is to be abolished. I am

to suggest for your consideration the advantage of having a number of small divisional charges directly under the Conservator, and the benefit which would result from the boundaries of the Forest Divisions coinciding as much as possible with those of the districts or divisions under Civil officers.

20. In conclusion, I am directed to state that the Governor General in Council agrees with you in the commendation bestowed on the good services rendered by Captain Vansomeren and the several officers named by him.

CONSERVATOR'S REPORT.

Annual Report No. 1121, *dated* 24*th July* 1874, *on the Management and Conservancy of the Coorg Forests for the Financial year* 1873—74, *by* CAPTAIN G. J. VAN SOMEREN, *Conservator.*

I have the honor to submit the Annual Forest Report of Coorg for the year 1873—74.

INTRODUCTORY.

2. No matters of interest to be recorded.

SPECIAL.

HEAD I.—STATE FORESTS.

3. No alterations have been made in the area of the State-forests, which are estimated to cover 375½ square miles. The details are given below in the prescribed form :—

Area of Reserved Forests.

Reserved Forests.	Area in 1872—73.	Added during the year.	Excluded or transferred to other heads.	Total remaining in 1873—74.
	Sq. Miles.	Sq. Miles.	Sq. Miles.	Sq. Miles.
I.				
Dubarre	40	...	...	40
II.				
Devamurchi	25	...	...	25
III.				
Mavukal	17	...	...	17
IV.				
Arekerenad	50	...	...	50
V.				
Hatkatnad	75	...	...	75
VI.				
Nalkerre	117	...	...	117
VII. & VIII.				
Vurti and Kerti	Not estimated.	...	...	0
IX.				
Chembu and Karinad	10	...	...	10
X.				
Anekadu	19½	...	...	19½
XI.				
Ganaguru	11¾	...	...	11¾
XII.				
Yedavanad	10	...	...	10
Total.....	375½	...	...	375½

4. *Demarcation.*—The total out-turn of work under this head was 67½ miles (nearly) of new lines cut to full width, (21 feet): a little more than 50½ miles of old lines cleared of new growth, and 1797 stones put down in the manner adopted by the Coorg Revenue Survey Department, in 599 stations over a total distance of 36 miles. Compared with the work of 1872—73, this shews eleven miles *less* of new lines, about 30 miles *more* of old lines cleared of fresh growth. No survey stations were fixed during 1872—73. This last item of work was carried out this year with the view both of facilitating the operations of the Revenue Survey Department, and of preparing the forests themselves for survey, a thing greatly to be desired.

5. The following forms shew the details and summary of demarcation work and its cost:—

No.	Name of Forest.	Length of new lines in miles.	Cost per mile.	Length of old lines cleared in miles.	Cost per mile.	Survey Stations fixed.	Cost per Station.	Remarks.
1	Dubarre	...	...	...	...	...	...	Incomplete.
2	Devamurchi	7½	32 8 10	20½	5 9 9	212	0 8 11	Demarcation completed in 1872-73, but line altered on complaint and small addition made.
3	Mavukal	...	...	16 1/10	6 13 0	...	...	Completed in 1872–73. No Survey Stations yet.
4	Arekerenad	...	...	...	...	...	...	Do.
5	Hatkatnad	...	...	...	...	...	...	
6	Nalkere	3¾	25 14 1	...	...	...	...	
7	Vurti and Kerti	...	...	...	...	...	...	Evergreen, not set off with cut lines
8								
9	Chembu and Karinad ...							
10	Anekadu	15 5/6	23 11 0	14	5 11 11	147	0 6 3	
11	Gn aguru	17½	*30 3 9	...	...	240	0 4 10	* Much bamboo.
12	Yedav-nad	2 2¾	27 5 10	...	...	...	...	

Summary.

	Total cost per mile.	Total cost.	Remarks.
*Length of new lines cleared, miles 67½ *	25 8 7	1,711 5 0	* Nearly.
Upkeep of old lines, miles 50½ †	5 13 6	303 4 2	† Rather more.
Survey stations set up (number) 599	0 6 8	250 1 8	
Total Cost.....	...	2,264 10 10	

6. At the close of 1872—73, the total length of demarcation lines cut was 127 miles. At the close of 1873—74, it stood at 194 miles. In the Devamurchi forests the line was altered near a village on the urgent representations of the villagers, but a plot of about 3,000 acres, contested the year before, was now included, and the forest finally completed.

7. *Cardamom Forests.*—The greater portion of the cardamom forests in Coorg were, in 1868—69, sold on leases to extend over a period of ten years, the lessees simply purchasing the right to cultivate cardamoms therein. The total sum for which the leases were sold was Rs. 3,16,670, payable in ten annual instalments. Owing to various

causes, the chief one being the high price of the spice at that time, the bidding was brisk. The desire to retain jungles which had for many years been in one family, also played a part in producing this result. But later the price of cardamoms fell, as the high market rates had stimulated production elsewhere, and the year 1872—73 closed with an outstanding, due by the lessees, of Rs. 11,127—7—2. The Superintendent of Coorg being written to on the subject by the Conservator, replied, that he feared that a portion of the outstandings would be irrecoverable, and that a reduction in the rents would probably be required. To this the Conservator demurred, and the result of further inquiries made was that the Chief Commissioner ordered a special inquiry into the whole subject.

Mr. Ludlow, Assistant Conservator in Nundydroog, was deputed by the Conservator for this duty, he having once cultivated cardamoms in Coorg and thus made himself well acquainted with the subject. His report was not submitted till after the close of the year, and has been sent on to the Chief Commissioner. As the question is still unsettled, no more need be said about it in this report, but that for 1874—75 should contain a concise account of the whole matter, and the manner in which it was settled.

8. The outstandings of 1872—73 were recovered, excepting a small balance of Rs. 556—0—3, but 1873—74 closed with an outstanding of Rs. 22,492—14—5. The inquiry disclosed the fact that while there was good ground for believing that losses had been greatly exaggerated, there were several cases of genuine distress which well deserve consideration.

9. *Devarakadu* or *Sacred Forests.*—During the year the Devarakadu or sacred forests were counted, registered, and the approximate area of each estimated. The boundaries were also given, and the number of reserved trees counted. Information was also afforded shewing which of them had been cultivated with coffee.

These forests were briefly referred to in the Annual Forest Report for 1871—72, but the lists called for by the Government could not be submitted till last year. In one taluk alone, Padinalknad, there are 131 of these forests.

10. Originally held in the greatest awe, believed to be the abode of spirits, and not to be entered by man, these forests grew on untouched from year to year. But when the people began to see that coffee was a commodity in great demand, they "made a theory" "(to quote the Superintendent's words)" "that there was no sin in planting coffee in these forests, so long as a portion of the produce is devoted to the deity." This naturally led to the portion enjoyed by the god being but small, while the most influential among his worshippers took the greater portion to themselves, thus getting their coffee without paying anything in the shape of acreage, seigniorage or excise, to the Government. Several of the forests, and more especially the larger ones were still left untouched, but would doubtless have been encroached upon, had not the matter attracted attention, been reported on, and orders issued for their inspection.

11. Orders dealing with the whole question have been received since the commencement of this year, in accordance with which the cultivation of coffee in untouched forests will be prevented, and further operations in partially worked-forests will be stop-

ped. The Government, having in some instances, tacitly acquiesced in the usurpation of the forest lands, no assessment will be imposed on such partially worked forests; but no portion of the proceeds of the coffee will be handed over to temples, as they are in no way connected with the forests.

12. The inspection and registration of these forests added considerably to the work of the Assistant Conservator.

SECOND SECTION.

REQUIREMENTS OF THE POPULATION IN THE VICINITY OF STATE-FORESTS, HOW PROVIDED FOR.

13. No provision has yet been made for setting off portions of forest for the use of the villagers within the lines of the State-Forests. The necessity for doing so speedily has been urged upon the Assistant Conservator, and while I was travelling in Coorg, I spent some time in the North of the Province making inquiries regarding the probable requirements of the villagers affected, and the Superintendent has since promised to deal with the matter this year in conjunction with the Assistant Conservator, and I have every hope that it will be satisfactorily commenced, though not completed this year.

THIRD SECTION.

PROTECTION OF THE FORESTS.

14. No attempt has yet been made to stop fires passing through our forests. A plan for the protection of the Anekadu forest will be submitted, and budgetted for this year, before extending operations to other forests.

15. The breaches of Forest Rules are given below in the prescribed form.

Prosecutions for Breaches of the Forest Rules.

Range.	No. of Prosecutions.		Convictions obtained or still pending.		Remarks.
	No. of Cases.	No. of Persons.	No. of Cases.	No. of Persons.	
Coorg.	4	6	4	6	None pending.

FOURTH SECTION.

IMPROVEMENT AND EXTENSION OF THE FORESTS.

16. Under this head are included plantations, of which there are three timber and two sandalwood reserves:—

Plantation.	Area in 1872-73.	Total Cost.	Area added during 1873—74.	Amount expended during 1873—74.	Total Area up to 1873—74.	Total Expenditure incurred up to 1873-74.
Karmad	189	9,626	... *	2,707	189	12,333
Kutampalle	152	5,192	...	760	152	5,952
Anekadu	20	250	...	1,051	20	1,301
Waddur Ane	50	289	...	72	50	361
Gangavara	5	65	10	253	15	318

* Fifty acres cleared for the plantings of 1874—75, not shewn in form which deals only with planted areas.

17. In Karmad the work done in planting was going over old ground. I reported last year that the plantation had been neglected, and this has necessitated expenditure this year without any increase of planted area. Fifty acres are reported to have been cleared in December 1873 (since my inspection) for the plantings of the current year. This cleared area does not appear in the form above, though the money spent on it appears in the expenditure columns.

18. At Kutampalle no actual extension is reported, as the nurseries are said to have failed. The work at Anekadu has been poor, and I was not at all satisfied when I inspected the sandal reserves at Waddur Ane and Gangavara. A small addition has been made to that at the latter place, at a cost out of proportion to the work done or results obtained. Seeds were put down in the Waddur Ane reserve, but no area has been given.

19. The Assistant Conservator's attention has been called to the poor work done generally in his plantations, and to the necessity for more careful supervision, and check on expenditure, especially as regards charges for weeding.

20. I have also directed him to discontinue operations at Waddur Ane, and to limit his sandal reserves to North Coorg, where a large quantity of good land is now available in the State Forests there demarcated. A small teak plantation commenced by him in Ammale tope, and on which Rs. 99—8—0 were spent, has been stopped, as it is useless thus to disperse his work. A small sum of Rs. 8—12—0 was spent in clearing round trees in the old plantation at Titimati.

20½. A sum of Rs. 510—10—0 was spent in opening out a road from Titimati to the Karmad plantation. This road is 4½ yards wide, and is practicable for carts in the fine weather. Small bridges have been made over nallas, and side drains cut where necessary. It will eventually be extended to the Nalkere forests, which at present are difficult of access from the Coorg side. The length completed is 12 miles at an average cost of Rs. 42—8—10 per mile.

FIFTH SECTION.

21. ACTUAL YIELD OF FORESTS, DISPOSAL OF TIMBER, &c.

Forests.	Teak.		Junglewood.		Bamboos.	Cost.	Remarks.
	Logs.	Poles.	Logs.	Poles.			
Titimati	...	...	50	624	30,950	For logs from Re. 1—1—5 to Re. 1—1—2.	
(In various Forests for the supply of the small depôts) at—							
Virarajpet	...	...	...	620	18,000		
Maldare	...	100	21	702	25,000	For poles, per cart load Re. 1—0—0.	
Fraserpet	...	160	29	1,235	94,500		
Suntikoppa	...	4	15	517	11,150		
Sidlingapur	...	...	137	748	33,000		
Kesarvalli	...	...	234	399	13,535	For bamboos per thousand Rs. 6—4.	
Totals.....	...	264	486	4,845	226,135		

22. In addition to the above, 720 cart-loads of firewood were felled for the Sadar Distillery at Fraserpet. As the forests near the distillery have been set off as "State," and as the felling for firewood was carelessly carried on, the Department undertook to cut wood, and supply it to the distillery at cost price.

23. No teak was felled, with the exception of a few poles, there being a sufficient stock on hand.

24. Collections and sales at depôts.

Depôts.	Collections.					Sales.					Realizations in Rupees.
	Teak.		Jungle.		Bamboos.	Teak.		Jungle.		Bamboos.	
	Logs.	Poles.	Logs.	Poles.		Logs.	Poles.	Logs.	Poles.		
Húnsúr	208 / 5649 cub. ft.	...	1 / 18 cub. ft.		...	822 / 17800 cub. ft.	...	373 / 9570 cub. ft.	...	...	19,570
Titimati	5 / 87 cub. ft.	...	101 / 2693 cub. ft.	624	30,462.	...	...	65 / 1696 cub. ft.	494	21,825	2,191
Small Depôts ...		218	605 / 10453 cub. ft.	3,066	1,60,642	...	114	772 / 12954 cub. ft.	1,045	1,13,462	13,687
Totals.....	208 / 5786 cub. ft.	218	707 / 13146 cub. ft.	3,690	1,91,104	822 / 17800 cub. ft.	114	1210 / 25300 cub. ft.	1,539	135,287	35,448

In addition to the above, 575 cart-loads of firewood were collected at Fraserpet and sold to the distillery; the value of this wood is included in the sum of Rs. 13,687 shewn in the statement above.

Of the 17,800 cubic feet of teak sold at Húnsúr 205 feet were given free to the Roman Catholic Mission at Kudlur.

25. The depôts at Húnsúr and Titimati are old established ones. The "small depôts" lumped together in the above statement are those lately established for the sale of wood in various parts of the country, when the license system was abolished. They are at Virarajpet, (with a sub-depôt at Maldare,) Fraserpet, Suntikoppa, Kesarvalli, and Sidlingapur.

26. During the year 1872—73, the license system was abolished, and thus 1873—74 was the first complete year of the working of the small depôt-scheme. The results will I hope be thought to have been favorable. Our object has been to fell carefully, and yet to meet the requirements of the public, which formerly supplied its wants by felling on license. It is needless again to enlarge on the evils of that system. Under the present system, while the Department looks for a fair return on the money spent in felling and carting wood, the gain to the forests by careful cutting and checking theft is its chief object.

27. Para 24 shews that the total realizations at these depôts during the year were Rs. 13,687. From this sum must be deducted Rs. 2,507 which were received in advance

for wood to be delivered. To the balance thus left of Rs. 11,180 must be added Rs. 582 for small wood felled, but sold in the forests, as not worth bringing into the depôts. Although in the summary of expenditure this sum appears under a separate head, it may, for purposes of comparison, be fairly added to the depôt sales, thus bringing their total up to Rs. 11,762.

28. Under the license system, the Government spent no money, but there was great waste in the jungles, and great openings for fraud. Wood sold on license during the preceding five years, 1868—69 to 1872—73 inclusive, brought in, in—

	Rs.
1868—69	6,125
1869—70	9,234
1870—71	6,423
1871—72	5,466
1872—73	2,429
Total....	29,677

29. The total cost of the new depôts, including felling and carting expenses, forest and depôt establishments, and all contingencies, was Rs. 7,389, shewing a surplus of Rs. 4,373. This is somewhat below the average of the preceding five years, if viewed as a return in money, though the percentage of profit on expenditure is certainly good. Again, as the total sales are more than double the average of five years, I think we may safely assume that theft has not taken place. The new system is the only one which admits of the forests being carefully worked and really conserved, and I also think that we may fairly hope to shew in the course of a few years that it will pay better, in hard cash, than that which it has replaced. When our forests are surveyed, and working plans introduced, the felling will be systematized more than is possible at present. Endeavours will be made to lessen the expenditure. Much of the wood and bamboos sold have been exported to the Hassan District in Mysore, where wood is scarce and in great demand.

30. *Sandalwood.*—The quantity of sandalwood collected and sold was:—

Collection in tons.	Cost per ton.	Tons sold.	Average Rate obtained.	Total Amount in Rupees.	Remarks.
83½	40 10 10	87	515 10 0	44,925	...

As was the case in the preceding year, no growing wood was felled. Dried trees and old roots were collected on contract. The Government orders restricting the sales to 50 tons having been removed, the whole stock on hand was disposed of, the selling price being nearly Rs. 51 in excess of those obtained in 1872—73. There were present some new buyers from Bombay, and the bidding was brisk.

GENERAL.

31. *HEAD I.—FINANCIAL RESULTS.*

Receipts.	Estimates.	Actuals.	Expenditure.	Estimates.	Actuals.
i. Sales at depôts.					
Timber...	39,400	35,917	*A. Conservancy.*		
Sandalwood	20,000	42,224			
ii. Removed from forests by purchasers.	1,000	582	i. Timber working	5,200	3,218
iv. Permit fees and cardamom rents	32,000	21,751	Sandalwood	2,500	3,850
v. Grazing dues	...	94	ii. Purchase of tools	500	388
vi. Minor products	2,500	3,552	iii. Feed and keep of cattle ...	200	28
vii. Confiscated wood	1,000	5,456	vi. Plantations	5,000	4,918
viii. Fines	100	3.7	vii. Forest work	15,200	7,390
ix. Miscellaneous	1,000	166	ix. Experiments on timber ..	100	5
			x. Communications and buildings ...	*3,000	3,204
Total.....	97,000	1,10,079			
Deduct Expenditure.....	42,200	34,708	Total A.....	31,700	23,001
Balance.....	54,800	75,371			
Deduct—			*B. Establishments.*		
Amount realized on account of previous years... ... 11,557			i. Salaries	6,612	6,580
Excess payments 2,807			ii. Travelling allowances... ...	2,888	4,451
Difference between value of stock at commencement and close of year ... 11,562	...	25,926	iii. Contingencies	1,000	676
			Total B	10,500	11,707
Balance.....	...	49,445	Total Expenditure.....	42,200	34,708
Add—					
Outstandings at close of 1873—74	...	30,468			
Net Results of year...	...	79,913			

32. *Receipts.*—The timber sales were Rs. 3,483 under the estimates, while the sandalwood sales were Rs. 22,224 above them. The rates obtained were far in excess of the fixed valuation, but as they have been falling slightly of late, I do not think it advisable to recommend a revision of the valuation.

Under iv, "*Cardamom rents*," the actuals fell short of the estimates by Rs. 10,249. But of the total sum actually recovered during the year (Rs. 21,751,) Rs. 10,571 were on account of 1872—73, shewing but Rs. 11,180 recovered for 1873—74. When I submitted my budget for the current year, I deducted Rs. 7,000—0—0 in the regular estimate for 1873—74, but this done on imperfect information has proved utterly inadequate. I have in paras 7 and 8 written fully about the cardamom forests, and need not here repeat myself.

VI, *Minor products* sold for Rs. 1,052 more than estimated; and vii, *confiscated wood* brought in Rs. 4,456 more than was expected, owing to the sale of a portion of the poles illegally felled in the Anekadu forest in a previous year. ix, *Miscellaneous.* Under this arbitrary heading, Rs. 834, less than estimated for.

SUMMARY OF RECEIPTS.

	Rs.
Increases	28,063
Decreases	14,984
Total Increase... ..	13,079

33. *Expenditure.—A, Conservancy.* Under timber working Rs. 1,982, less than estimates, owing to restricted operations; but under sandalwood an increase of Rs. 1,350, more wood having been brought in.

Under heads ii, iii, vi, and ix, a total saving of Rs. 460. Under head vii, *Forest work*, which included the total cost of the small depôts, Rs. 7,810 under estimates, owing chiefly to the full quantity of wood estimated for not having been brought in. This large lapse should not have occurred, but it is hoped that better arrangements will prevent this next year. Under ix, a saving of Rs. 95 on an estimate of Rs. 100, and an excess of Rs. 204 in communications.

B, Establishments.—A few rupees were saved under i, Salaries, while on the other hand "Travelling allowances" were exceeded by Rs. 1,563, owing chiefly to the expenditure incurred by Mr. Ludlow's deputation to Coorg to report on the cardamom forests. Under *Contingencies*, a saving of Rs. 324.

SUMMARY.

	Rs.
Savings	10,608
Excess Expenditure..	3,117
Total Savings..	7,491

34. The excess payments (Rs. 2,807) were received in advance for wood to be supplied, a proceeding which I have requested the Assistant Conservator not to again allow. The difference in value of stock is against the year to a large amount, owing partly to the whole stock of sandalwood having been disposed of, and chiefly to the sales at small depôts being late in the year, and new stock not in. The outstandings due to the Department are for cardamom rents, for sandalwood sold (amount since recovered,) and for wood sold, the value of which fell to be paid in 1873—74. All excess expenditure was met by sanctioned transfers.

35. The financial results are now summarized in the form ordered by the Government of India.

		Rs.
Realizations		1,10,079
Deduct—		
Realized on account of transactions of former years . ..	11,557	
Excess payments in advance for 1874—75	2,807	14,364
Balance.....		95,715
Add—		
Outstandings on account of the year		30,468
Value of year's transactions ..		1,26,183
Disbursements		34,708
Balance.....		91,475
Deduct—		
Difference between the value of stock at the commencement and close of 1873—74		11,562
Net Results of year.....		79,913

GENERAL REMARKS.

36. The Forests in Coorg were throughout the year in charge of Mr. H. R. Ring, whose substantive appointment is still that of a Sub-Assistant Conservator, though he has now served four years, and during almost the whole of that time held charge of a Range, or Division as it is called elsewhere. I have been compelled to note the poor work in plantations, but on the other hand, he has had his hands full of other work.

The inspection of lands applied for by coffee planters, and work connected with the inspection of the Devarkadu took up much of his time. He received instructions from the Superintendent during the year to inspect and report upon upwards of 500 pieces of land. Much allowance must therefore be made for him. The subject of the inspection of lands applied for coffee has lately attracted the notice of the Government of India, and it will doubtless result in the Assistant Conservator being left free to devote more time to his own more immediately proper duties.

37. Ranger Kogandra Mudaiya is still unpromoted. He is a good man and a good worker, and I have lately again laid his case before the Chief Commissioner. The Ranger well *deserves* promotion, and I trust it will no longer be withheld.

38. No remarks regarding the other subordinates need be entered here.

G. J. VAN SOMEREN, *Captain,*
Conservator of Forests Mysore and Coorg.

Government Series, No. 21.

COORG FOREST DEPARTMENT.

Annual Summary of Revenue and Expenditure for the year 1873—74.

Particulars.	Amount.	Remarks.
RECEIPTS.		
i. Sale of timber brought to Depôts		
Timber	35,917 2 3	
Sandalwood	42,224 4 0	
ii. Do removed by purchasers, &c...	581 12 0	
iii. Duty on foreign timber	... ...	
iv. Permit fees, and rent of jungles, &c.	21,751 2 6	
v. Grazing dues	94 6 0	
vi. Sale of fruits, babul pods and other minor forest produce	3,551 10 8	
vii. Do confiscated timber	5,455 7 6	
viii. Fines and forfeitures	337 4 0	
ix. Miscellaneous	166 4 9	
Total Receipts.. ...	1,10,079 5 8	
EXPENDITURE.		
A. Conservancy and Working.		
i. Timber expenses.	3,218 7 11	
Timber	3,849 11 4	
Sandalwood	387 12 0	
ii. Purchase of tools, &c....	27 12 0	
iii. Feed and keep of cattle	... ...	
iv. Rent of leased forests	... ...	
v. Charges connected with the collection of revenue on grass, &c.	4,918 7 8	
vi. Plantations	7,389 14 10	
vii. Forest work	... ...	
viii. Forest survey	5 10 0	
ix. Experiments to test the value on timber	3,203 11 2	
x. Communications and buildings		
Total A, Conservancy and Working.....	23,001 6 11	
B. Establishment.		
i. Salaries	6,580 8 8	
ii. Travelling allowances...	4,451 7 8	
iii. Contingencies	675 7 0	
Total B, Establishment.....	11,707 7 4	
Total Expenditure...	34,708 14 3	

Government Series, No. 22.

COORG FOREST DEPARTMENT.

Annual Abstract Account of the Cash Transactions of the Forest Department for the year 1873—74.

Year.	Heads of Account.	Amount.	Year.	Heads of Account.	Amount.
1873—74.	To Cash Balance in hand on 1st April 1873 ...	2,710 15 1	1873—74.	By Expenditure of the Department ...	34,708 14 3
	„ Revenue received	1,10,079 5 8		„ Remittance to State Treasuries ...	1,10,079 5 8
	„ Remittances from State Treasuries ...	36,632 5 5		„ Balance in hand on 31st March 1874 ... (Inclusive of Rs. 512, outstanding against Contractor Kasim Saib.)	4,634 6 3
	Total Rs.....	1,49,422 10 2		Total Rs.....	1,49,422 10 2

Government Series, No. 23.

COORG FOREST DEPARTMENT.

Annual Statement of Outstandings and Liabilities of the Department on account of Contractors and other Disbursers for the year 1873—74.

Division.	Departmental Debtor.			Departmental Creditor.			Balance due—		Remarks.
	At Commencement of the year.	Recoveries in cash and value of supplies and work done.	At Close of the year.	At Commencement of the year.	Payments made during the year.	At Close of the year.	To Department Outstandings.	By Department Liabilities.	
Coorg ...	...	23,001 6 11	23,001 6 11	2,710 15 1	24,924 14 1	27,635 13 2	4,634 6 3	...	

Government Series, No. 28.

COORG FOREST DEPARTMENT.

Annual Account of Forest Revenue for 1873—74.

Receipts.	Amount.			Disbursements.	Amount.		
Amount of revenue realized in 1873—74	1,10,079	5	8	Amount disbursed in 1873—74	34,708	14	3
Deduct—				Deduct amount disbursed on account of transactions			
Amount realized on account of previous years Rs. 11,557 2 10				of former periods	...	...	...
„ realized for timber issued in 1874—75. „ 2,807 3 10	14,364	6	8	Balance.....	34,708	14	3
Balance	95,714	15	0	Add amount due for transactions during the year under review but not yet disbursed	...	...	...
Add outstandings at close of the year	30,468	14	3				
Value of the year's transactions.....	1,26,183	13	3	Real cost of the year's transactions.....	34,708	14	3

Value of the year's transactions	1,26,183	13	3
Cost of the year's transactions.....	34,708	14	3
Balance.....	91,474	15	0
Deduct difference between the value of the stock at the commencement and close of the year	11,562	0	0
Net Realization of the year.....	79,912	15	0

CONSERVATOR OF FORESTS' OFFICE,
MYSORE AND COORG,
Bangalore, 24th July 1874.

D. E. HUTCHINS,
Asstt. Conservator of Forests,
Accounts' Branch.

COORG FOREST DEPARTMENT.

Stock Account of Quantities and Value of Timber and other Forest Produce on hand at the commencement and close of the year 1873—74.

Description.	In Depôt on 1st April 1873.		Add received during 1873—74.		Deduct issued or sold during 1873—74.				Remaining in Stock on 31st March 1874.		Remarks.
	Quantity.	Probable Value.	Quantity.	Probable Value.	Quantity.	Probable Value.	Amount realized.	Difference. Profit. / Loss.	Quantity.	Probable Value.	
					Timber.						
Teak	890	11,570 0 0	0	0 0 0	724	9,412 0 0	14,843 6 0	5,174 6 0 / ...	166	2,158 0 0	* Includes Rs. 2,807—3—10, paid into the Treasury in 1873—74 for timber issued in 1874—75.
Do Poles	105	150 0 0	264	264 0 0	212	257 0 0			157	157 0 0	
Junglewood	1,682	13,456 0 0	486	3,888 0 0	1,270	10,160 0 0	11,986 8 4	1,826 8 4 / ...	898	7,184 0 0	
Do Poles	...	... ...	4,845	4,845 0 0	1,555	1,555 0 0	1,721 7 10	166 7 10 / ...	3,290	3,290 0 0	
Bamboos	...	... ...	2,26,135	4,520 0 0	1,35,937	2,720 0 0	6,330 14 7	3,610 14 7 / ...	90,198	1,800 0 0	
Firewood, Cart-loads	...	... ...	720	720 0 0	575	575 0 0	566 0 3	... / 8 15 9	145	145 0 0	
Total.....	2,677	25,176 0 0	2,32,450	14,237 0 0	1,40,273	24,679 0 0	*35,448 5 0	10,778 4 9 / 8 15 9	94,854	14,734 0 0	
	Tons.				**Sandalwood.**						
Good wood	3½	1,120 0 0	83½	26,720 0 0	87	27,840 0 0	44,924 10 0	17,084 10 0 / ...	...	... ...	
Grand Total.....	2,680½	26,296 0 0	2,32,533½	40,957 0 0	1,40,360	52,519 0 0	80,372 15 0	27,862 14 9 / 8 15 9	94,854	14,734 0 0	

CONSERVATOR OF FORESTS' OFFICE,
MYSORE AND COORG,
Bangalore, 24th July 1874.

D. E. HUTCHINS,
Asstt. Conservator of Forests,
Accounts Branch.

COORG FOREST DEPARTMENT.

Statement shewing the Number of Logs felled, sold and remaining for the year 1873—74.

Description.	Remaining at close of 1872—73.	Felled during 1873—74.	Total.	Sold or issued during 1873—74.	Remaining at close of 1873—74.	Remarks.
Teak	890	...	890	936	166	
Do Poles	105	264	369		157	
Junglewood	1,682	486	2,168	1,270	898	
Do Poles	...	4,845	4,845	1,555	3,290	
Bamboos	...	2,26,135	2,26,135	1,35,937	90,198	
Firewood (Cart-loads)	...	720	720	575	145	
Total.....	2,677	2,32,450	2,35,127	1,40,273	94,854	

CONSERVATOR OF FORESTS' OFFICE,
MYSORE AND COORG,
Bangalore, 24th July 1874.

D. E. HUTCHINS,
Asstt. Conservator of Forests,
Accounts' Branch.

COORG FOREST DEPARTMENT.

Statement shewing the Expenditure incurred on account of Plantations in Coorg up to the close of the official year 1873—74.

Division.	Name of Plantation.	Previous Area planted.	Area planted in 1872—73.	Area planted in 1873—74.	Total Area planted.	Previous Cost of formation and maintenance.	Cost of formation and maintenance on Area planted in 1872—73.	Cost of formation on Area planted in 1873—74.	Total Cost of formation and maintenance on whole Area planted.	Amount realized on crops in previous years.	Amount realized on crops in 1872—73.	Amount realized on crops in 1873—74.	Total Amount realized on crops.	Total Net Cost of Area planted formation and maintenance.	Average cost per Acre for formation, and maintenance. In previous years	Average cost per Acre for formation, and maintenance. In 1872—73.	Average Cost per Acre for formation in 1873—74.	Average Cost per Acre for formation and maintenance on whole Area planted.
Coorg.	Karmad (Teak.)	169	20	...	189	8,011 0 0	1,615 0 0	2,707 0 0	12,333 0 0	...	...	...	...	12,333 0 0	47 6 6	80 12 0	...	65 4 1
	Kutampallé (do)	134	18	...	152	4,180 0 0	1,012 0 0	760 0 0	5,952 0 0	...	...	...	...	5,952 0 0	31 3 2	56 3 7	...	39 2 7
	Karepura (Anékadu.)	...	20	...	20	...	250 0 0	1,051 0 0	1,301 0 0	...	...	...	...	1,301 0 0	...	12 8 0	...	65 8 10
	Waddarané (Sandal)	20	30	...	50	220 0 0	69 0 0	72 0 0	361 0 0	...	...	...	...	361 0 0	...	5 12 6	...	7 3 6
	Gangavara (do)	...	5	10	15	...	65 0 0	253 0 0	318 0 0	...	...	...	...	318 0 0	...	13 0 0	...	15 2 10
	Total.....	323	93	10	426	12,411 0 0	3,011 0 0	4,843 0 0	20,265 0 0	...	...	...	...	20,265 0 0	...	...	...	...

CONSERVATOR OF FORESTS' OFFICE,
MYSORE AND COORG,
Bangalore, 24th July 1874.

D. E. HUTCHINS,
Asstt. Conservator of Forests,
Accounts' Branch.

PROGRESS REPORT

OF

FOREST ADMINISTRATION

IN THE

PROVINCE OF COORG,

1873—1874.

By CAPTAIN G. J. VAN SOMEREN,

CONSERVATOR OF FORESTS.

REVIEW BY THE CHIEF COMMISSIONER.

---

1. The Report has been drawn up by Captain van Someren, the Conservator.

INTRODUCTORY.

2. No remarks.

SPECIAL.

HEAD I.—STATE FORESTS.

FIRST SECTION.

3. The area of these forests (12 in number) was the same as that given last year, *viz.*, 375¼ square miles.

4. The demarcation work made fair progress; nearly 67½ miles of new lines were cut to full width, and a little more than 50½ miles of old lines cleared of new growth. 1,797 stones were put down in 599 stations over a distance of 36 miles. This last work was carried out with the view both of facilitating the operations of the Revenue Survey Department and of preparing the forests themselves for survey. Compared with the work of 1872—73, the work done during the year shews 11 miles less of new lines and 30 more of old ones cleared out. At the close of 1872—73, the length of lines cut was 127 miles, and at the close of the year under review, it stood at 194 miles. The total cost incurred under this head was Rs. 2,264—10—10.

5. The report on the outstandings in connection with the cardamom forests is very unsatisfactory, but this portion of the report has been separately dealt with. In 1868-69, the greater part of these forests were sold on leases extending over 10 years for Rs. 3,16,670 payable in ten annual instalments. The high price of this spice at the time made the bidding at auction brisk, but later, when its price fell, the outstandings increased, and the year 1872—73 closed with a balance due by the lessees of Rs. 11,127 —7—2. This sum was subsequently recovered to a good extent, leaving a small balance of Rs. 556—0—3; but the year 1873—74 closed with an outstanding of Rs. 22,492

—14—5. A special inquiry into the question of the adjustment of cardamom rents was ordered during the year, and special orders have been passed regarding the outstandings. No doubt they are principally due to reckless bidding among the Coorgs, who were averse to see the forests pass away from their hands, and failed to calculate on the fall of price.

6. During the year the sacred forests were counted, registered, and the approximate area of each estimated. The boundaries were also given and the reserved trees counted. Originally, these forests were believed to be the abode of spirits and were held in the greatest awe. Coffee cultivation has of late been introduced into several of them, a part of the produce being devoted to the deities of those forests, and the rest appropriated by the most influential of their worshippers without payment of any acreage, seigniorage or excise. The attention of the Chief Commissioner having been drawn to the subject, orders were issued to prevent further cultivation of coffee in these forests as well as finally to define the position of the Coorgs in regard to them.

SECOND SECTION.

Requirements of the Population, &c.

7. No provision was made for meeting the requirements
vicinity of State forests. The Conservator reports that arrangements are being made with this object. The Chief Commissioner trusts that they will be completed speedily.

THIRD SECTION.

Protection of Forests.

8. No attempt was made for the protection of forests from fire. The Conservator promises the submission of a scheme for protecting the Anekadu forests from fire during the current year.

9. There were four cases of breaches of Forest Rules, in which 6 persons were concerned, who were all convicted.

FOURTH SECTION.

Improvement and Extension of the Forests.

10. There are 3 timber and two sandalwood plantations. The Chief Commissioner regrets to observe that the work done in connection with these plantations was very poor, only 10 acres were added during the year. The up-keep of the 5 plantations up to 1873—74 cost Rs. 20,265, the amount expended during the year being Rs. 4,843, and the total area 426 square miles. A sum of Rs. 510—10—0 was spent in opening out a road from Titimati to the Karmad plantation, the length completed being 12 miles at an average cost of Rs. 42—8—10 per mile.

11. The Conservator states that he has called the attention of the Assistant Conservator to the necessity for more careful supervision and check on expenditure, and the Chief Commissioner trusts that the next year's report will shew that this has been duly attended to.

FIFTH SECTION.

Actual Yield of Forests, &c.

12. No teak was felled during the year, except 264 poles. Of junglewood, there were 486 logs, and 4,845 poles and 226,135 bamboos. In addition to the above, 720 cart-loads of firewood were felled and 575 collected at Fraserpet for the use of the distillery there. The wood was felled departmentally and delivered at cost price.

13. The total collections at the various depôts were as follows :—

Teak logs	$\frac{208}{5736}$	Cubic-feet.
Do poles	218	
Jungle-wood logs	$\frac{707}{18146}$	Cubic-feet.
Do poles	3,690	
Bamboos	1,91,104	
Sandalwood	83½	Tons.

14. The sales were of—

Teak logs	$\frac{822}{17800}$	Cubic-feet.
Do poles	114	Pieces.
Jungle-wood logs	$\frac{1210}{23800}$	Cubic-feet.
Do poles	1,539	
Bamboos	1,35,287	

The amount realized on the whole was Rs. 35,448 and on sandalwood Rs. 44,925. As in the preceding year, no growing wood of the latter kind was felled in 1873—74. Old roots and dried trees alone were collected on contract. The orders of the Government of India restricting the sales to 50 tons having been modified, the whole stock on hand was disposed of, the selling price being Rs. 51 in excess of those obtained in 1872-73.

15. The license system having been abolished during the year 1872—73, the year 1873—74 was the first complete year of the working of the small depôt scheme. The results were no doubt favorable on the whole. The total realizations at the depôts during the year were Rs. 13,687. From this sum Rs. 2,507, received in advance for wood to be delivered, has been deducted, and to the balance Rs. 11,180, Rs. 582 for small wood felled and sold in the forests is added, thus bringing up the actual sales to Rs. 11,762, which, compared to what was realized under the license system during the past 5 years, *viz.*, Rs. 29,677, is no doubt a satisfactory figure.

16. The cost of the new depôts including all charges was Rs. 7,389. If the scheme be carefully worked, the Chief Commissioner hopes that its results will improve.

GENERAL.

HEAD I.—FINANCIAL RESULTS.

17. *Receipts.*—The statement comparing actuals with estimates shews that there was a large falling off under the heads of "sales of timber" and "cardamom rents" of Rs. 3,483 and Rs. 10,249, respectively, making in the aggregate Rs. 13,732; while there was an increase of Rs. 22,224 from "sandal," Rs. 1,052 from "minor products" and Rs. 4,456 from "confiscated wood." The financial results on the whole were therefore satisfactory, the actuals having exceeded the estimates by Rs. 13,079.

Expenditure.—Under "timber working" there was Rs. 1,982 less than the estimates. This, it is stated, was owing to restricted operations; but under sandalwood there was an increase of Rs. 1,350, owing to more wood having been brought in. Under the head "Forest work" there was a large lapse of Rs. 7,810. This would have been prevented if proper arrangements had been made. The total savings were Rs. 7,491.

18. The practice of giving advances for wood to be supplied should be strictly prohibited.

19. The general financial results are summarized as follows :—

I. Realizations		Rs. 1,10,079
Deduct—Realized on account of transactions of former years,	Rs. 11,557	
Excess payment in advance for 1874—75	„ 2,807	14,364
	Balance Rs.	95,715

	Balance Rs.		95,715
Add—Outstandings on account of the year ..	„		30,468
Value of year's transactions	„		1,26,183
II, DISBURSEMENTS	„		34,708
Balance	„		91,475
Deduct—Difference between the value of stock at the commencement and close of 1873—74	„		11,562
Net result of the year	„		79,913

GENERAL REMARKS.

20. The Conservator brings to notice the arduous duties performed throughout the year by Mr. H. Ring, the Assistant Conservator. Although the work in plantations was poor, yet Mr. Ring is stated to have had his hands full of work in other ways. The inspection of the Devarkadus, of lands applied for for coffee, and the inspection of, and report on upwards of 500 pieces of land, fully engaged his time during the year. The Chief Commissioner hopes that Mr. Ring will earn a still more favorable opinion from the Conservator in future years.

21. Ranger Kogandra Muddaiya is spoken of as a good worker, and the Chief Commissioner is glad to find that he has recently been promoted to the post of Subedar.

"By Order,"

H. WELLESLEY,

Secretary.

BANGALORE,
18*th March* 1875.

No. 528, dated Simla, the 1st May 1875.

From—C. J. LYALL, Esq., *Under Secretary to the Government of India,*

To—*The Chief Commissioner of Coorg.*

IN acknowledging the receipt of your letter No. 811-34, dated 31st March last, forwarding the Progress Report of the Forest Department in Coorg for 1873-74, I am directed to notice the late date on which it reached the Government of India. The Conservator's report is dated the 24th July 1874, but it was not received in this office until the 12th ultimo.

2. The Governor General in Council has noticed with satisfaction the large surplus realized during the year. The main item under receipts was Rs. 42,224 on account of the sale of 87 tons of sandalwood. The Conservator reports that no growing wood was felled, and it is understood that dry or decaying trees only and roots were collected. If this is the case, then the large sale of sandalwood in question is unobjectionable. With reference, however, to the remark made in your review and in the Conservator's report that the orders restricting the sales to 50 tons had been removed, I am directed to explain that if the orders contained in the letter addressed to the Chief Commissioner of Mysore, No. 1257, dated 30th October 1873, are referred to, they in no way authorized the unlimited cutting of sandalwood trees. I am to invite your attention to paragraph 17 of the orders* on the Mysore Forest Report for 1873-74, and to state that pending the collection of data regarding the legitimate annual outturn of sandalwood from the Coorg forests, the collection and sale of sandalwood from growing trees should not exceed 50 tons per annum.

* No. 222, dated 25th February 1875.

3. As regards the improvement of the forests, it is satisfactory that progress has been made in the clearing of boundary lines, of which 194 miles were done up to the close of 1873-74. I am, however, to request that the Conservator of Forests may be asked to state in his next annual report what length of boundary lines remains to be cleared, of which reserves the boundaries have been completed, and of which they remain to be completed. It is obviously important that this work should be speedily completed. It is believed that the Coorg forest reserves have been selected with judgment by the Conservator, the main portion forming an almost continuous belt along the Mysore frontier, and being in continuation of the teak forest belt of Wynaad and the Mysore district. It is important that these forests should be preserved. The first step therefore is to establish their boundaries in a safe and unmistakeable manner, and the second to keep out fires.

4. In the orders on the Forest Report for 1872-73, a hope was expressed that the forests had enjoyed immunity from fire. It is explained in the present report that no attempt has yet been made to stop fires from passing through the Coorg forests. The Conservator should consider whether in those reserves which are situated on level or gently undulating ground it would not be possible to clear a system of straight roads through the forests, radiating from certain central and suitably situated points. These roads may serve for the export of timber and dry wood, and after they have been kept clear by traffic for some time, they will be found useful as fire lines.

DEPUTY CONSERVATOR'S REPORT.

Annual Report, No. 342, dated Chickulda, 29th June 1874, on the management and conservancy of the Berar Forests for the Financial year 1873-74, by A. T. DRYSDALE, ESQ., *Officiating Deputy Conservator of Forests, Berar.*

I HAVE the honor to submit the Progress Report of Forest Administration in the Hyderabad Assigned Districts for the year 1873-74.

INTRODUCTORY REMARKS.

STATISTICAL DATA AND FOREST LEGISLATION.

2. Under instructions from the Resident, a revision took place during the year of the District Forest Rules, with a view to assimilating them as much as possible, and the result was the issue of a general set of rules for the whole Province, supplementary to the Survey and Settlement rules, and in supersession of all former rules. These rules, which were brought into force at the close of the year, were published in the *Residency Orders* of the 6th April 1874. The principal changes effected by them are the employment of village officials for the collection of forest dues; the withdrawal of duty on certain items of minor forest produce that used formerly to be taxed, and the reduction in the rates of duty on reserved descriptions of timber.

3. Sanction has also been accorded to the introduction of a scheme for the working of the district forests on rotation under the above rules. This scheme provides for the setting apart in each talook of certain tracts of forest land free from cultivation, which are to be considered strictly reserved until they become thickly enough wooded to be worked as coppice for the supply of timber large enough to be used in the construction of "dhabba" or flat roofed-houses.

No cultivation, or felling of wood, or grazing of cattle, is to be allowed within the tracts, and a fire-path is to be made round them annually in the cold weather, as soon as the grass is dry enough to burn. And to further assist natural reproduction, seed of the more common varieties of trees is to be sown broadcast on the barer spots at the close of the hot weather.

As soon as the tracts have been selected, the remaining forests are to be worked on a rotation of 15 years by grouping village waste lands together in each talook, and opening certain areas annually. After being worked, these areas are to be closed against grazing for a few years, until the coppice shoots and young trees are high enough to be out of reach of harm from cattle.

In the meantime the villagers in the vicinity are to be allowed to cut such grass within the areas as they require for domestic purposes.

Fires are also to be guarded against as much as possible. The above scheme provides for a supply of timber suitable for the better class of houses in Berar; a description of timber which, under the system of working the forests formerly in force, was yearly becoming scarcer, and would probably in course of time have become almost unprocurable.

It also secures a permanent supply of wood suitable for ordinary houses and for general purposes.

Under the old scheme for working the district forests, little or nothing was done for conservancy. Large quantities of wood were felled in an irregular manner over the entire area of the forests without any steps being taken for creating a fresh supply, for trees could never be expected to reproduce themselves, so long as they were given no rest, and fires were allowed to spread annually over the ground on which they grew, as well as cattle to graze on the land all the year round.

4. The rules defining the rights and privileges of the inhabitants of the State Forests in the southern division referred to in para. 3 of the Report for 1872-73 received the sanction of the Resident, and were published in the *Residency Orders* of the 20th June last.

PART I.—SPECIAL.

HEAD I.—STATE FORESTS AND LEASED FORESTS.

SECTION I.

AREA, BOUNDARIES, DESCRIPTIVE ACCOUNT.

Area of Reserved Forest.

	Area in 1872-73.	Added during the year.	Excluded or transferred to other heads.	Total remaining in 1873-74.
	Square miles.	Square miles.	Square miles.	Square miles.
Northern Division.				
Byraghur	400	...	...	400
Southern Division.				
Garoo Mattergaon	75	...	...	75
Ghat Boree	50	...	14	36
Pemgunga	70	...	...	70
Khelapoor	50	...	...	50
Small tracts of Mangla, Jaolgaon, Renkapoor and Dapura ...	1	...	...	1
Total...	646	...	14	632

Demarcation of the Byraghur Reserve.

5. In the review by the Government of India of the Report for 1872-73, the following remarks were made with reference to the Byraghur reserve:—

"The reserves as demarcated are very large, and some of them contain numerous inhabited villages with shifting cultivation."

"The maintenance of the population in these large reserves is of the greatest importance, even from a purely forest point of view, as the means of carrying out forest works by the supply of local labour is thus afforded."

"At the same, it has been determined to grant these villages every right within the reserves that is consistent with conservancy, so that the reserves in the Mélghat appear to be much on the same footing as the unreserved forests of other parts of India."

"It may, however, be open to question, His Honor the President in Council considers, whether the reservation of a very large area with free rights all over it is a system preferable to preserving more strictly a smaller area in places where population is least effected, and where conservancy of the forest as a whole, and not merely of special kinds of trees, can be carried out without injuring or oppressing any one."

6. On the subject of the above remarks, I explained in my letter to the First Assistant Resident, No. 1,007, Financial, dated 20th February 1874, that some misapprehension appeared to exist as regards the footing on which the State Forests in Berar were placed, for no just comparison could be made between the reserves in the Mélghat and the unreserved forests of other parts of India.

7. The State Forests in the Mélghat are strictly reserved.

No timber is cut in them or removed from them, except through the Agency of the forest department.

Non-residents are neither allowed to fell wood nor graze cattle within them, and such privileges—for there are no rights, the settlement being a riot-waree or field settlement—as are granted to residents are in no way inconsistent with the conservancy of the forests. The villages inside the reserves are as a rule composed of merely a few small huts, whose occupants supply most of their wants from their own fields. It is seldom they require to indent on the forest for anything, and when they have to, there are special rules laid down to meet this object, and these rules protect forest interests in every respect.

8. Nevertheless, as cultivation shifts, I am grouping all the cultivated villages together, and when this is accomplished, which will, however, be a work of time, the area comprised within them can be struck off from the reserve entirely, if considered desirable. This area might then be worked under the rules for the unreserved forests of the Mélghat, whilst the reserve would remain a pure State Forest having no cultivating or other rights within it.

9. Appended to this Report is a sketch map of the Byraghur reserve, showing the inhabited and uninhabited villages as at present existing, from which it will appear that the lower portion of the reserve is comparatively waste; and this comprises the finest timber producing area in the whole of the Mélghat. Towards the north, on the other hand, cultivation becomes more plentiful, and it is in this direction, therefore, that emigration is being encouraged.

10. Last year there were altogether 871 ploughs in the reserve, and if to each plough we allow 10 acres, which is above, rather than below the mark, we have a total cultivated area of 8,710 acres, or about 14 square miles, or, in other words, 3½ square miles of cultivation in every 100 square miles of waste.

Assuming that half of the above area represents shifting cultivation, the ground being cultivated for 5 years in succession and then left fallow for 10 years, the total area required for purposes of cultivation would be $\frac{8710}{2}+(\frac{8710}{2}\times 3)$ acres $=$ 17,420 acres, or about 27 square miles.

And allowing each village to have three times the amount of waste that it has of cultivation, the area that would require to be struck off the reserve would be about 108 square miles, leaving an area of reserve free of all rights of 292 square miles.

Demarcation of the reserve in South Berar.

11. During the past year, I made a complete inspection of the reserves in south Berar in company with Mr. Prevost, recently appointed to the charge of this division.

Ghat Boree.

12. In Ghat Boree I found that Mr. Morrow had included extensive tracts of cultivation that there was no occasion for doing; and it became necessary, therefore, to revise almost the entire boundaries. This I did myself, with the assistance of Mr. Prevost; and by cutting up the reserve into four distinct blocks, I was enabled to form a compact forest of 36 square miles 407 acres, and, at the same time, to exclude all cultivation, with the exception of 6 fields, containing a little over 141 acres, for the resuming of which, I am now in correspondence with the Deputy Commissioner, Booldana. Ghat Boree, therefore, has now become a State Forest free of all cultivating or other rights. The demarcation is being pushed on as rapidly as possible, and it is hoped that it will be completed by the close of the present working season. This change of boundaries has not necessitated any extra expenditure, for, as explained in para 7 of last year's Report, Mr. Morrow had nowhere made the boundary cuttings according to the prescribed plan. Lines had merely been cleared on the tops of hills and on plateaus, the ravines and sides of hills being left untouched. And notwithstanding the instructions issued to him, he had failed to complete the demarcation prior to the date of his services being dispensed with.

In any case, therefore, the cutting of fresh lines would have been necessary.

Garoo Mattergaon Reserve.

13. Now that the Revenue Survey of the Buldanah district has been completed, and this department has been furnished with maps on the scale of 8 inches to the mile of the villages included within State Forests, I have called upon the Assistant Conservator to submit proposals for the revision of portions of the boundaries of Garoo Mattergaon, so as to exclude the 1,699 acres of cultivation it at present contains, and thus place this reserve on the same footing as that of Ghat Boree. This desirable change I hope to be able to effect without reducing the area of the reserve to any great extent.

Pemgunga.

14. In my letter to your address No. 186, General, dated 14th March 1874, I reported that owing to cultivation having been allowed to extend unchecked for the last three years, the greater portion of the area comprising the Pemgunga Forest had been rendered almost useless for the purposes of a reserve.

15. Except in the north east corner, where a compact tract of forest of from fifteen to twenty square miles existed, it was almost impossible to find anywhere a square mile of continuous waste land containing timber. The entire area had become dotted over with cultivation. For this state of things I could only blame the late Assistant Conservator, Mr. Morrow, for although he was not the person who actually gave away the land, yet the control over the culturable waste was invested in him, and he neglected to exercise this control. I found that he had not even distributed copies of the State Forest rules to his subordinates, and that the latter were quite unaware that any check should have been kept on the extension of cultivation. Nor had the attention of the Assistant Commissioner in charge of the district been drawn to these rules, and arrangements made for all applications for land for cultivation being sent to the Assistant Conservator for approval prior to being sanctioned.

16. Under the above circumstances, I recommended that the entire reserve, with the exception of the 15 to 20 square miles of continuous waste, should be abandoned, and another reserve selected in that portion of the Kinwut pergunnah lately transferred to Berar from H. H. the Nizam's dominions.

17. This tract, which I had an opportunity of inspecting about five years ago, contains as good a tree growth as is to be found in any portion of Berar outside the Melghat, and is almost entirely waste. It is besides easily accessible, and has the advantage of being bounded on three sides by the Pemgunga river.

18. The Resident's sanction to these proposals was conveyed in letter to your address No. 51, dated 9th April 1874, and it is expected that the demarcation of the remaining portion of the Pemgunga Forest will be completed before the monsoon sets in, whilst the reserve in the Kinwut Pergunna will be selected at the commencement of next working season.

Both forests will be free from cultivation, and from rights of all kinds.

A few of the waste villages inside the Pemgunga Forest are at present held by Izardars; but it is proposed to give these men land elsewhere instead.

Khelapoor Reserve.

19. The Khelapoor Forest I found to be very much in the same state as that of Ghat Boree. It contained a large amount of cultivation that there was no occasion for taking up, and I was consequently obliged to revise the greater part of the boundaries.

As at present defined, there is included within this forest the whole of 3 and portions of 3 waste Izarah villages, one waste "Neem"—jagheer village—and about 300 acres of cultivation. For resuming of these areas, I have submitted proposals, pending the settlement of which, I have instructed the Assistant Conservator to delay cutting the boundary lines.

The temporary boundary marks erected by me sufficiently define the reserve for the present.

In marking off this forest, I had not the advantage of having the Revenue Survey maps to assist me, so I cannot state its area exactly. There will not, however, I consider, be much difference between the present area, and that shown in former reports, *viz.*, 50 square miles.

Should the villages and cultivation above referred to be resumed, this reserve will also become free of all cultivating and other rights.

HEAD I.—STATE FORESTS AND LEASED FORESTS.

SECTION 2.

...quirements of the surrounding population, prescriptive rights.

Byraghur Reserve.

20. The requirements in the matter of wood and other forest produce of the inhabitants of the Byraghur reserve, and the measures adopted to provide for the same, were explained in the report for 1872-73.

Reserve in South Berar.

21. Rules to meet the requirements of the inhabitants of the State Forests in the southern division were framed during the year, and received the sanction of the Resident. They were published in the *Residency Orders* of the 20th June 1873.

A copy of the rules is given in Appendix A.

These rules, I need hardly remark, will not be required, if I succeed, as I hope to shortly, in forming the reserves into continuous waste areas without inhabitants or cultivation.

HEAD I.—STATE FORESTS AND LEASED FORESTS.

SECTION 3.

PROTECTION.

Permanent Establishment.

22. The permanent subordinate establishment was revised during the year, and an increase to it at a cost of Rupees 607-8-0 *per mensem* sanctioned in letter from

the Under Secretary to the Government of India, Department of Agriculture, Revenue, and Commerce, No. 952 dated 18th August 1873.

Of this sum, Rupees 480 is on account of temporary Establishments made permanent, so that the real increase amounts to only Rupees 127-8-0.

A list of the several permanent and temporary establishments is given in Appendix B.

Forest offences.

23. Subjoined is a statement of the prosecutions that have been made for breaches of the Forest Rules :—

Districts.	No. of prosecutions.		Convictions obtained.	
	No. of cases.	No. of persons.	No. of cases.	No. of persons.
Ellichpur	30	102	24	77
Oomrotee	13	18	11	11
Akolah	53	127	44	88
Basim	3	3	1	1
Booldanah	31	103	20	80
Woon	54	94	48	84
Total ...	184	447	148	341

Compared with 1872-73, there has been an increase both in the number of cases and in the number of people prosecuted of 31 in the former and 25 in the latter; whilst the proportion the number of convictions bears to the number of prosecutions remains about the same.

24. The forest rules have now become generally known throughout the Province, and grave infractions of them are of rare occurrence. Most of the prosecutions shown in the above statement are for offences of a comparatively trivial nature, and for which, consequently, slight punishments merely were awarded.

25. One case of importance only was tried during the year, and this was against a Mélghat bazaar carkoon for embezzlement of revenue. The case was important, not so much on account of the sum actually embezzled, as from the facts elicited during the trial, and which proved that a combination existed for defrauding Government between several of the bazaar carkoons, or revenue collectors, and certain wood traders from the plains; and, further, that these carkoons were in collusion with the head clerk and Sheristadar of my office. The trial resulted in the imprisonment for seven, six, and three years, respectively, of the carkoon, Sheristadar and head clerk, whilst another carkoon was sentenced to three years' imprisonment; and a wealthy and influential wood-trader to a fine of rupees 500. The three officials first named appealed to the Resident, but the district Magistrate's finding and sentence in each case was upheld.

26. On the completion of this trial, I drew the attention of the Resident to the advisability of procuring good and trustworthy men for the posts of bazaar carkoon, considering the heavy and responsible duties such work entailed, and the Resident was pleased on my recommendation to sanction, as an experimental measure, the grant to the carkoons of 2 per cent. on the revenue collected by them in addition to their present pay, thus increasing the inducements to honesty and diminishing those to fraud.

27. At the same time, a greater check on these men was introduced. *Firstly*, by making each find security to the extent of Rupees 300. *Secondly*, by arranging for the collection of a portion of the foils issued by them. *Thirdly*, by placing the Patel of each village in the neighbouring talooks in possession of a copy of the

various rates of duty leviable at the nakahs. *Fourthly*, by setting apart a field for each bazaar with only one gate of entrance and one of exit for forest produce. *Fifthly*, by procuring a better description of pass from Bombay, and, *Sixthly*, by arranging with district officers for the award of a portion of the proceeds of sale of confiscated forest produce to the person on whose information the produce was seized.

28. These measures have already produced satisfactory results. I have been enabled to procure a better class of men for the appointments, as they have fallen vacant, whilst the revenue has considerably increased, and there have been fewer complaints against the establishment.

29. I ought perhaps to mention that the combination above referred to is supposed to have existed for some time, and that in following up the clew which led to its discovery, I received great assistance from the late Deputy Commissioner of Ellichpur, Captain Mackenzie.

Head I.—State Forests and Leased Forests.

Section 4.

MANAGEMENT AND IMPROVEMENT.

Tracts protected from fire.

30. The following is a comparative statement of the area of forest tracts protected from fire during the year :—

Forest tracts protected from fire.	Area in 1872-73.	Total cost.			Area protected in 1873-74.	Amount expended in 1873-74			Total area protected up to 1873-74.	Total expenditure up to 1873-74.		
MELGHAT.	Acres.	Rs.	A.	P.	Acres.	Rs.	A.	P.	Acres.	Rs.	A.	P.
Raipoor block ...	19,200	954	6	2	19,200	516	5	9	38,400	1,470	11	11
Byraghur, reserve ...	206,720	46	13	...	236,800	...	...	...	443,520	46	13	0
Open blocks, Nos. 1 and 2 ...	...	...	...	...	33,200	102	7	4	33,200	102	7	4
Khelapoor reserve ...	32,000	...	...	...	3,200	...	...	...	6,400	...	...	...
Pemgunga do. ...	...	...	...	...	6,400	...	...	...	6,400	...	...	...
Garoo Mattergaon do. ...	...	...	...	...	32,000	39	2	9	32,000	39	2	9
Ghat Boree do. ...	...	...	...	...	6,400	27	8	9	6,400	27	8	9
Total ...	257,920	1,001	3	2	337,200	685	8	7	566,320	1,686	11	9

There has thus been an extra area protected of 79,280 acres, whilst the cost has been reduced by Rupees 315-10-7.

Raipoor Block.

31. Success has for the fifth year attended the efforts of the department to exclude fires from the Raipoor block.

No fires broke out during the year, and the expense of the measures adopted for effecting this was little more than half that incurred last year, although exactly the same measures were had recourse to.

32. This great difference in expenditure is owing to the employment of Gond corps referred to in para. 48 of the report for 1872-73, instead of Koorkoos, in the burning of fire-paths, &c. The Gonds have now become quite expert at forest work of all descriptions, and it is seldom that other labour has to be employed. The consequence is that work is done not only quicker, but better and cheaper than formerly, whilst the Koorkoos are free to follow the bent of their own inclinations. When not engaged in their fields, and they want work, they can generally get it on application. But as a rule their spare time is fully occupied in their favorite pursuit of carrying wood for sale to the

bazaars. Almost the entire revenue of the reserve for the year was derived directly from the Koorkoos.

33. There is now a complete understanding between this department and the inhabitants of the reserve, and differences seldom or never occur.

On this subject Mr. Ballantyne in his report remarks; "the inhabitants of the Mélghat now understand that their old privileges are not interfered with, when they are at all consistent with forest conservancy. The offences against the forest laws have been very few within the reserve; the people are becoming well versed in the rules; and the watchers are beginning to know their duty better year by year; there is less vexatious meddling on the part of the establishment, and certainly there are less offences committed. Dhya cultivation is entirely stopped. Cutting down teak and other reserved sorts of wood in cultivated land is almost unknown; and firing the jungle is, I may say, unknown also."

34. After this it may not be considered surprising that for the first time the entire reserve has been protected from fire, more especially when it is remembered that, during the preceding year, seven-eighths of the forests, or about 350 square miles, were saved.

35. It is very gratifying, however, to know that this success has been attained without any expenditure saving the grant of rewards to Patel to the extent of Rupees 180.

The fire path round the reserve was burnt by the establishment in the cold weather when the grass was comparatively green, and burnt only in the day time, going out of itself in the cool of the afternoon, or at latest at sunset.

36. A few years ago to protect the whole reserve from fire would have been looked upon as an impossibility. In fact, such a thing was never attempted, or even thought of. And that it has been accomplished now is, I think, it will be admitted, satisfactory proof of the good feeling existing at the present time on the part of the inhabitants towards this department, for there is nothing easier than to burn jungle without being detected, and consequently if the people had any grudge against the department, or were in any way inclined to oppose it as they would be, if vexatiously oppressed, this is one of the first things they would do.

37. It must be remembered, too, that to people who live in the forests, a coarse growth of grass is a source of no little discomfort, for besides harbouring wild beasts, it renders walking a work of considerable difficulty, because of the silica therein in large quantities, making it cutting as boys' kite strings that have pounded glass glued on, and therefore the people, if left to themselves, would naturally burn it.

38. Every year that fire is kept out of the Byraghur reserve, the easier does the task become of extinguishing fires that may accidentally or of design break out in the future, for with the exclusion of fires, the sides of ravines and hills become so thickly covered with seedlings and undergrowth that the grass is entirely eradicated.

The effect is of course not so noticeable in more open localities.

39. Natural reproduction throughout the reserve is becoming very marked. Fine young trees are springing up in all directions. Such of them as were situated in open parts of the forest suffered rather severely last cold weather from frost, but those in sheltered localities and on the higher grounds escaped entirely.

Reserves in South Berar.

40. Some success has also been attained in the protection from fire of the reserves in south Berar, as will be seen from the statement given in para 30.

41. Under this head Mr. Prevost, the Assistant Conservator, writes:—

Garoo Mattergaon.

"In the Garoo Mattergaon reserve I found much encouragement in the manner in which natural reproduction had been stimulated by the use of fire-paths in keeping

out fires, although fire had not been kept out as much as could be wished. Everywhere young seedlings are springing up, and the trees show more vitality and freshness. The fires that have occurred this year are chiefly owing to the careless way the watchers have got into from want of proper supervision."

Ghat Boree. "Most of this reserve has been devastated by fires, owing to the want of fire-paths, which ought to have been burnt in my predecessor's time, and the only parts that are saved are due to the paths I ordered to be made on taking over charge in January."

Pemgunga. "Fire has burnt much of the grass in this reserve, but it could hardly be expected to be kept out when no line had been cut round the reserve—much less a good clear path burnt."

Khelapoor. "Fires have also entered this reserve, but unavoidably, as no paths had been burnt round it."

42. Prior to the date of Mr. Prevost's assuming charge, no steps had been taken for protecting the reserves in the southern division from fire, and a large area of them had already been burned. That any portions have been saved is due chiefly to the active interest displayed by Mr. Prevost in his work, and to the expeditious manner in which on joining he had paths burned round these areas. I have little doubt that in next year's Report, I shall be able to chronicle a more satisfactory state of affairs regarding the southern division reserves.

43. Subjoined is a detailed statement of the area under plantations at the close of the year:—

Area of plantations.

Plantations.	Area in 1872-73.	Total cost.			Area added during 1873-74.	Amount expended during 1873-74.			Total area up to 1873-74.	Total expenditure incurred up to 1873-74.			Remarks.
MELGHAT.		Rs.	A.	P.		Rs.	A.	P.		Rs.	A.	P.	
Peeli	12	823	0	0	...	...	...	...	12	823	0	0	Teak.
Rakidoh	13	155	14	2	...	25	0	0	13	180	14	2	do.
Sembadoh	2	28	0	0	...	...	...	...	2	28	0	0	do.
Doogaputty	11	435	0	0	...	...	...	...	11	435	0	0	do.
Peepulcotta	120	3,007	7	10	...	375	0	0	120	3,382	7	10	do.
Saoli	30	381	3	2	100	1,908	3	5	130	2,289	6	7	do.
Bujru	82	1,309	0	0	...	312	0	0	82	1,621	0	0	do.
Lubu	279	2,761	14	6	...	400	0	0	279	3,161	14	6	do.
Saoli and Kurita	...	...	...	...	370	1,332	9	7	370	1,332	9	7	do.
Total...	549	8,901	7	8	470	4,352	13	0	1,019	13,254	4	8	
OOMRAOTEE DISTRICT.													
Bheewapoor...	25	150	5	6	...	...	...	...	25	150	5	6	Teak.
Cheroree	25	198	11	0	12	96	12	0	37	295	7	0	Teak & Babul.
Mahadeokora	5	38	0	0	...	...	...	...	5	38	0	0	Teak & Bamboo.
Seonee Khoord	24	163	3	0	...	60	0	0	24	223	3	0	Teak & Babul.
Oomraotee tree plantation ...	74½	1,481	5	0	29	170	0	0	103½	1,651	5	0	Mixed.
Total...	153½	2,031	8	6	41	326	12	0	194½	2,358	4	6	
BOOLDANA DISTRICT.													
Beorkheida Garoo Mattergaon reserve	8½	154	9	0	8	12	3	0	16½	166	12	0	Anjan.
BASIM DISTRICT.													
Belura Pemgunga reserve ...	7	46	8	0	...	141	0	0	7	187	8	0	Teak.
Pangla do. do. ...	2	4	6	0	...	...	...	...	2	4	6	0	do.
Pandurna do. do. ...	1	...	15	0	...	...	...	...	1	0	15	0	do.
Basim District forest ...	...	...	...	...	20	77	2	0	20	77	2	0	Babul
Total...	18½	206	6	0	28	230	5	0	46½	436	11	0	
Grand Total...	721	11,13	6	2	539	4,900	14	0	1,260	16,049	4	2	

During 1873-74, there has thus been an increase made to the area under plantations of 539 acres at a cost of Rupees 4,909-4-0, or a little over Rupees 9 per acre, 470 acres of this area being in the Byraghur reserve, 41 acres in the Oomraotee district, and 28 acres in the reserves of South Berar.

Byraghur Reserve.

44. Of the 470 acres in the Byraghur reserve, 100 acres were pitted, the remaining 370 acres being sown on the notch system described in para. 43 of last year's report.

The whole 470 acres are a continuation of the former Saoli plantation situated in the valley of the Seepna, and having a northern exposure.

The pits and notches were made at 6 feet apart, the pits being 1 × 1, and the notches having the earth dug only deep enough to cover the seed.

15—20 selected seeds were put into each notch.

Saoli Plantation.

45. To supply plants for 100 acres of plantation at Saoli, a nursery was formed during the cold season, and sown with seeds collected a year before. The seed beds were covered with grass, and left in this state for three months without receiving any artificial watering. In April the grass was removed, and the beds kept well watered till the rains set in.

The nursery occupied nearly three-fourths of an acre and produced 138,000 seedlings. Of these 122,560 were planted out in the Saoli plantation, the remainder being used in filling up blanks in the plantations of former years. Among the seed sown in this nursery were 730 seeds procured from Burmah. These produced 540 plants, which, compared with the Melghat ones, were darker green in the foliage and of a more robust growth.

Mr. Ballantyne complains of the injury this plantation has sustained from the depredations of field rats, to which he ascribes the death of nearly 6 per cent. of the plants.

Saoli and Kurita Plantations.

46. There was very little clearing of jungle required for these plantations, as the entire area consisted of old fields which had been thrown out of cultivation about 10 years ago. The seed sown germinated freely as a rule, and the seedlings remained healthy till the end of March, by which time the soil to the depth the roots had penetrated lost much of its moisture, thus killing a large number of plants.

Enough plants are, however, left to cover the area, and besides it is expected that a fair proportion of the seeds sown will germinate during the ensuing rains.

In future the soil in the notches will be loosened to a greater depth, so that the roots of the plants may make a better growth during their first season.

47. In sowing seed in notches success depends greatly upon the kind of rainy season the young plants are first exposed to. If there be heavy protracted rain-fall, success is almost certain, but, on the other hand, if the rains be scanty, or of short duration, many deaths are sure to occur during the first hot weather.

48. The total expenditure on the Melghat plantations amounted to Rupees 4,352-13-0.

Thus:—

	Rs.	A.	P.
Nursery	200	0	0
Clearing plantation ground	500	0	0
Digging pits	715	9	11
Filling pits and transplanting seedlings	617	9	6
Making notches and sowing seed	825	0	0
Filling up blanks in old plantations	307	9	7
Weeding plantations	1,187	0	0
Total...	4,352	13	0

Plantations of former years.

49. The plantations of former years continue healthy, and have entirely recovered from the effects of the frost of the cold season of 1872. Lately, however, they have had a still worse enemy to contend against in rats. Without a personal inspection no one would believe the amount of damage these animals have caused. In the Peepulcottah plantation alone more than 7,000 plants have been cut over, some of them having been above three feet in height. If the plants are small, the rats cut the stems close by the ground, if large, say two or three years old, they dig the earth out to a depth of two or more inches, and then gnaw through the roots in a sloping direction, giving them the appearance as if they had been cut with some sharp instrument.

The rats do not seem to attack any tree but teak. In a portion of the Saoli plantation, where teak is mixed with Sisso, many of the teak have been killed, whilst not a Sisso tree has been touched.

Of all the remedies tried, including poisoning, for the preservation of the plantations from rats, none has succeeded so well as keeping the plantations as clear of grass as possible.

50. In the Report for 1872-73, it was mentioned that from a supply of seed of the "*cupressus torulosa*" received from the Himalayas, 1,700 plants were raised.

These were transplanted last rainy season in a ravine on the Chickulda plateau, and up to date only about 6 per cent. have died.

It was also mentioned that 2,000 plants of the kattang bamboo had been raised at Chickulda. Instead of transferring these to the reserve, they were planted out in the same ravine as the cypress trees.

At the same time, about 12,000 kattang bamboos that had been raised in the public garden at Chuckulda were transplanted in a suitable locality near the station, and they are now firmly established.

The kattang bamboo does not grow naturally in the Mélghat, and it is to be hoped, therefore, that the plants now raised may take root and multiply.

Plantations in the Oomraotee District.

51. Of the 41 acres added to the Oomraotee plantations, 12 comprise an extension of the Cheroree and 29 an extension of the head-quarter's plantation.

Both areas were sown on the notch system, with, it is reported, only partial success. Just as in the Mélghat, the seed germinated freely at the commencement of the rains, but a large proportion of the plants died during the hot weather. Instructions have been issued for the notches to be dug deeper during the current year, and it is hoped that greater success may be attained in consequence.

Plantations of former years.

52. The plantations of former years in the Oomraotee district are said to be progressing favorably, with the exception of that at the Sudder station, and, as explained in last year's report, this plantation can never be expected to succeed, the site being so poor and there being such a total absence of soil. As so much money and labor, however, have been expended on it, I purpose having the remaining area—57½ acres—sown during the current year on the notch system, and then leaving the plantation to its fate. If the trees grow to any size, further expenditure might be incurred, otherwise the plantation should, I think, be thrown up altogether.

Plantations in the Garoo Mattergaon and Pemgunga reserves.

53. A further area of 8 acres has been added to the Boarkheida plantation in the Garoo Mattergaon reserve at a cost of only Rupees 12-3-0. The seed was sown in drills. Regarding this plantation, the Assistant Conservator reports:—"During my inspection of the Garoo Mattergaon reserve, I visited the Anjan plantation near Boarkheida, and have the following interesting facts to relate:—

Boarkhalda plantation.

In the beginning of the year, the whole of the plantation was burnt owing to the carelessness of the watchers in burning a road in the vicinity of the plantation.

The young shoots and trees were completely burnt and withered up, and I heard from my Daroga that there was little hope of their ever being worth anything. Six weeks after the fire, a heavy fall of rain took place, and in less than a week the apparently dead plants revived, and sent out vigorous and sturdy shoots: some weeks after this, when I visited the place, they were half a foot high, and the drills as full of fresh green young trees as they had been before the fire."

Belura plantation.

54. The sum of Rupees 141 spent on the Belura plantation has been of little advantage, as far as the Pemgunga reserve is concerned, for this village is situated in the area lately struck off from the reserve. The plantation, however, was not a success, so the reserve has sustained no great loss by its abandonment.

Plantation at Basim.

55. The Babul plantation at Basim, occupying an area of 20 acres, and costing Rupees 77-2-0, was made on the notch system as an experiment by the District Forest Establishment, under instructions from this office. The soil is reported by the district officer to be of a rich quality, and the plantation to be in a forward condition.

There are now from 2,500 to 3,000 trees in good preservation, and besides a quantity of seed originally sown is expected to germinate during the ensuing rainy season.

Head I.—State Forests and Leased Forests.

Section V.

YIELD AND WORKING OF THE FORESTS.

Thinning operations.

56. The thinning operations carried on in the Byraghur reserve for the last two seasons were continued, and 15,000 more badly grown teak trees cut over at a cost of Rupees 336-8-6.

The operations were conducted in the Abapoor ravine, which immediately adjoins the area worked last year. The total area over which these fellings have extended from their commencement in 1871 up to date amounts to nearly $3\frac{1}{2}$ square miles.

The trees felled during the year under report yielded 49,018 pieces of timber of small dimensions, of which 46,988 pieces were sold, and realized a revenue of Rupees 18,832-11-5. Of this amount Rupees 2,781-5-4 are still outstanding, whilst, on the other hand, Rupees 1,698-0-6 have been realized on account of outstandings of previous years, so that the actual receipts during the year from sale of timber amount to Rupees 17,749-6-7.

From sale of bamboos and other produce a further sum of Rupees 3,406-3-10 was realized: thus making the revenue of the Byraghur reserve amount to Rupees 21,155-10-5.

57. The stumps of the trees felled in previous years have yielded as fine a crop of shoots as could possibly be desired. The latter will, however, require to be thinned out in several places during the ensuing year.

Cart road from Ellichpur to Peeli.

58. Sanction has lately been accorded to the construction of the proposed cart road between Peeli and Ellichpur. The plans and estimates are still before the Government of India, but the Executive Engineer, East Berar Division, hopes to be able to commence operations during the ensuing rainy season.

This road will open direct communication between Boorhanpoor and Ellichpur, for carts already come as far as Peeli. Indeed, a very large proportion of the timber felled in the Byraghur reserve finds its way to Boorhanpoor and other large towns in the Nimar district.

59. The great advantages that will be afforded by this road to the inhabitants of the Mélghat, as well as to the Forest Department, were explained in para. 22 of the report for 1872-73.

Clearing out of old stems in the Pemgunga reserve.

60. In the southern division the Assistant Conservator reports that 4,699 badly grown teak trees were cut over near Panald in the Pemgunga reserve, and that from the sale of the good wood yielded by them, the sum of rupees 645-10-0 was realized.

With few exceptions, the stools have thrown out healthy and vigorous shoots.

61. There are, I regret to say, no other operations to record in the reserves of South Berar. Mr. Morrow held charge of the division till the 25th September 1873, and his successor, Mr. Prevost, did not join his appointment till the 22nd January 1874. And since joining, Mr. Prevost's time has been completely occupied in making himself acquainted with his charge, and revising the boundaries of his reserves. Everything, however, in South Berar has again been started on a satisfactory footing, and next year I hope to be able to show a better out-turn of work.

Sub-division of reserves and preparation of working plans.

62. It is hoped that during the ensuing year the sub-division of the reserves into blocks and compartments will be commenced, as well as the drawing up of general working plans.

Present condition of reserves.

63. None of the reserves contain full grown timber, and operations, therefore, for the improvement of the forests alone remain to be undertaken.

These operations will chiefly consist in: (1) the burning of paths for the protection of the forests from fire; (2) the cutting of creepers; (3) the planting up of blank spaces, which are so situated as to render the natural sowing of them either impossible or a work of time; and (4) the cutting over level with the ground of all teak and other trees from which poles are growing at too great a distance from the ground ever to mature into timber. These trees, it will be remembered, are "relics of former times when persons in want of a pole had no hesitation in meeting their requirement from the upper portion of a standing tree, cutting it 10 and 12 feet from the ground. The stumps, of course, remained, and threw out numerous shoots from its upper parts."

Map of Byraghur reserve.

64. The delay in marking off the Byraghur reserve into blocks and compartments is owing solely to the non-receipt up to date of the Topographical Survey Maps on the scale of 1 inch to the mile, the maps at present in use being on too small a scale to admit of a satisfactory sub-division of the forests.

The Surveyor General has, however, promised to supply these maps on an early date.

In the meantime no great inconvenience is caused, for all operations that are undertaken, such as plantations, thinnings, cutting of creepers, &c., are confined to one tract, and not distributed over a large area of country.

Maps of reserves in Southern Division.

65. For the sub-division of the reserves in South Berar the revenue Survey Maps will suffice; and Mr. Beynon, the Superintendent, hopes to be able to supply these during the ensuing year.

PART I.—SPECIAL.

HEAD II.—UNRESERVED OR DISTRICT FORESTS.

Unreserved Forests.

66. The following is a comparative statement of the area of unreserved Forests for the last two years:—

Area of Unreserved Forests.

	Area in 1872-73.		Added during the year.		Excluded or transferred to other heads.		Total remaining in 1873-74.	
ELLICHPUR.	S. M.	Acres.	S. M.	Acres.	S. M.	Acres.	S. M.	Acres.
Mélghat talook	1,100	...	...	...	...	...	1,100	...
Babool buns of Ellichpur and Durriapoor talooks ...	15	567	4	457	...	...	20	384
OOMRAOTEE.								
Fuel reserves	60	...	...	...	...	...	60	...
Babul buns	14	35	...	...	...	...	14	35
Akolah	35	...	...	...	...	...	35	...
Buldanah	466	320	82	160	9	160	539	320
Basim	769	...	...	...	...	...	769	...
Woon	1,188	320	...	...	...	...	1,188	320
Total...	3,648	602	86	617	9	160	3,726	419

There has thus been a net increase of 77 square miles 457 acres, which is due to the alteration of the cultivated area during the year in the Buldanah and Ellichpur districts.

67. The same rules that obtained in 1872-73, for the management and working of the unreserved Forests, have remained in force during the year under report. Towards the close of the year, the rules were assimilated, as it was found inconvenient to have differences existing in those of neighbouring districts. Except in this particular, the rules are reported to have worked satisfactorily. The revised rules were published in the *Resilency Orders* of the 6th April 1874.

NORTHERN DIVISION.

Ellichpur District, working of block No. 2 of Mélghat unreserved forests.

68. Block No. 2 of the Mélghat unreserved Forests was opened on the 1st June 1873; and below is a statement of the amount of teak and other reserved woods exported up to the close of the official year.

Statement of teak and other reserved woods exported from block No. 2 of the Mélghat unreserved Forest during 1873-74:—

Bazaars.	Carts.		Bullock loads.		Kurrass.		Head loads.		Total No. of pieces exported in ten months, *viz.*, from June 1873 to March 1874.	Duty levied at bazaars.		
	No.	Pieces.	No.	Pieces.	No.	Pieces.	No.	Pieces.				
Jamode	...	...	...	...	...	...	...	...	...	...	...	...
Sohalla	...	...	225½	1,887	...	...	200½	4,779	6,666	137	12	0
Jhiree	...	...	2,833	14,092	4,140	15,165	2,370	9,370	38,627	5,852	12	0
Boldee	...	...	175¼	701	5,192¾	26,163	2,555½	3,158	30,022	5,599	13	0
Akoli	...	...	1,826	7,304	2,487¾	19,896	3,486½	4,358	31,558	3,836	9	0
Neemkera	...	...	2,750	12,929	201	2,412	76	76	15,417	1,585	8	0
Damungaon	...	...	186	558	3,344¼	16,721	607	910	18,189	3,513	2	0
Gowlkera	...	...	35	707	1	7	5	6	720	18	13	0
Bhyram	...	...	...	...	...	...	...	...	...	...	...	0
Kullunkar	17	496	13,424	40,272	...	...	3	5	40,773	6,718	6	0
Wagoli	...	...	...	...	15⅜	134	...	...	134	15	6	3
Total ...	17	496	21,454¾	78,450	15,382⅛	80,498	9,303½	22,662	182,106	27,340	1	9

69. Compared with block No. 1—*vide* Report for 1872-73—there has thus been an increase of 74,533 in the number of pieces exported, and of Rupees 15,789-1-9 in the amount of duty levied.

This difference is accounted for by block No. 2 having remained open four months longer than block No. 1. Moreover, block No. 2 contained a larger quantity of teak than block No. 1, inasmuch as it had been reserved for a longer period. It comprised a portion of the area proposed in 1870 to be formed in to the "Kutkali" reserve, and had been closed ever since.

70. The inhabitants of the Mélghat now thoroughly understand the rules for the working of the unreserved Forests, and few infractions of them take place.

Tress are felled level with the ground; smuggling is of rare occurrence, and fires are carefully guarded against.

71. From the strict enforcement within the reserve and the open block of the unreserved Forests of the rule regarding the felling of trees level with the ground, the people are gradually being weaned from their destructive habit of cutting trees breast high, and the beneficial effects of the rule are already recognizable even in tracts removed from the direct supervision of the Forest Department.

72. The result of the teak cutting during 1872-73 in block No. 1 is as satisfactory as could be desired. With few exceptions, the stools have thrown out vigorous and healthy shoots, which now vary from 6—10 feet in height. Little or no unreserved timber has been exported from this block during the year, and the forest has therefore enjoyed almost complete rest.

73. Greater success than in the previous year has attended the efforts of the department to keep down fires within the blocks.

At an expenditure of Rupees 102-7-4, five-sixths of block No. 1 and two-thirds of block No. 2 have been saved. Only one fire occurred in each block. It is not known how the fire in block No. 1 originated, but that in block No. 2 resulted from the establishment not being able to control the fire when burning the path round the block. The fire extended to the forest, and before it could be extinguished, about one-third of the entire area had been burned.

74. In para. 67 of the report for 1872-73, it was stated that from the date of opening block No. 2, the custom of issuing passes on all wood exported would cease, and a trial be given instead to a system of wood branding. This was done, but it soon became apparent that from merely branding the wood, a sufficient check could not be exercised on the bazaar carkoons, and the system of passes had again to be introduced. But to protect the Koorkoos on a difference occurring between the amount of wood brought by them to the bazaars, and that entered in the passes the carkoons were directed not to confiscate any wood in excess of the passes, so long as it was branded. This rule has had the desired effect, and the nakah arrangements with reference to teak exported from the open block now work to the satisfaction of all parties.

75. The Koorkoos have only had one cause for complaint during the year, *viz.*, the large quantity of teak and other forest produce brought to the Mélghat bazaars from Malgoozaree and private Estates in the Baitool and Nimar districts of the Central Provinces, and sold at rates considerably lower than those formerly obtaining or than the Koorkoos can afford to part with their produce at. On this subject I have already addressed you, and recommended that if traders from the Central Provinces are to be allowed to use our roads for the transport of their wood, as well as our bazaars for the sale of the same, it is only fair that the usual dues should be levied from them. Were such done both parties would be placed on an equality.

76. Annexed is a statement of unreserved timber and other produce, exported from the Mélghat unreserved Forest during the year.

List of unreserved timber and other produce

Bazaars.	Unreserved timber.				Firewood.			Lime.		Charcoal.		
	Carts.	Kurrass.	Bullocks, Ponies, or Donkeys.	Head loads.	Carts.	Camels.	Bullocks, Ponies, or Donkeys.	Carts.	Bullocks, Ponies, or Donkeys.	Carts.	Bullocks, Ponies, or Donkeys.	Head loads.
Jamode ...	118	485	...	353	172	...	15	25	...	60	56	34
Sonalla ...	125	1,223¾	150	3,796½	141	23½	11¼	...	...	29	20	197
Jhiree ...	821	851¾	15	6,488	1,148	1,500	206	13	6	47	1,053	960
Boldie ...	301	4,100¼	3	486¼	1,130	67	1,619	....	14	...	1,162	516
Akolie ...	92	3,575¼	3	3,050¼	709	...	2,901	...	...	88	201	112
Neemkera ...	712	2,059	...	5,478¼	601	300	944	...	...	2	1,452	....
Damungaon ...	2,231	5,751	...	2,921½	2932	716	1,788	150	271	18	501	172
Gowlkera ...	137	542	14	2,942	943	309	1,445	...	...	76	911	1,079
Bhyram ...	1,055	2,949¼	...	2,600	276	500	500	...	....	28	1	67
Kallumkar ...	36	160	...	...	...	...	...	150	...	...	...	...
Wagoli ...	...	447⅛	...	136	48	...	138	....	....	...	189	...
	0	0	0	6	0	9	3	0	0	0	0	0
	0	3	13	7	8	8	12	0	7	0	12	2
Total duty ...	11,256	11,072	57	3,531	3,037	640	566	338	53	696	1,204	392
Total produce ...	5,628	22,144⅜	185	28,251¼	8,100	3,415½	9,567¼	338	291	348	5,546	3,137

exported from the Mélghat during 1873-74.

Grass.			Lac.						Roots and fruits.			Gum.			Miscellaneous.				Total.
Carts.	Camels.	Bullocks, Ponies, or Donkeys.	Carts.	Bullocks, Ponies, or Donkeys.	Head loads.	Teak leaves (bundles).	Bamboos.	Bamboo tatties.	Carts.	Camels.	Bullocks, Ponies, or Donkeys.	Head loads.	Carts.	Bullocks, Ponies, or Donkeys.	Head loads.	Carts.	Camels.	Bullocks, Ponies, or Donkeys.	Head loads.	
263	...	...	...	...	...	69	19,409	...	...	...	...	5	...	...	...	18	...	...	10	...
555	...	490	...	...	7½	507	63,082	66	...	...	...	2	...	...	...	40	16	...	136	...
105	...	65	...	...	23	2,004	255,201	2	...	...	...	41	...	...	53	...	...	...	1157	...
651	...	150	25	58	20	1,712	80,862	16	100	...	3	20½	...	...	9	79	...	37	121	...
2,509	...	465	...	1	15½	412	97,226	19	41	...	...	13	...	...	...	46	...	269	140½	...
811	...	56	5	...	...	763	106,094	12	...	...	...	...	...	...	...	80	...	2	2½	...
1,446	10	2,230	...	11	85½	1,916	122,416	511	...	...	24	70½	...	...	1	16	...	20	211½	...
606	...	7,108	...	...	1	1,198	128,794	51	405	...	32	3	...	...	...	...	...	1	77	...
501	...	101	40	...	11	739	64,614	522	518	9	140	33	...	...	...	104	...	1	27	...
5	5	1	2	3	12	4	3,449	4	2	...	...	...	4½	11	5	...	...	...	...	...
2	...	39	...	...	...	21	26,049	3,893	...	...	2	...	...	...	22	...	...	...	5	...
0	0	0	0	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0
14	13	14	0	0	13	7	14	8	0	8	8	8	8	4	8	0	0	0	6	15
2,796	2	1,004	360	73	65	584	9,671	318	1,599	13	146	23	13	8	22	1,149	24	123	174	51,021
7,454	15	10,705	72	73	175½	9,351	967,196	5,096	1,066	9	201	188	4½	11	90	383	16	331	697½	

77. A similar statement was attached to the Report for 1872-73, and on comparison of the two, it will be found that produce to the value of nearly Rupees 20,000 has been exported in excess of last year.

78. This large increase is attributable to the higher appreciation by the people of the plains of timber of unreserved descriptions; to the reduction in the duty on certain articles of forest produce, and to the better management of the nakahs. The addition of one more bazaar, *viz.*, that at Wagoli may also have effected the revenue to a slight extent.

79. This bazaar, it will be remembered, was opened on the abolition of the system referred to in my letter to your address No. 853, General, dated 12th December 1873, under which the carkoon at Neemkera used to levy duty on certain days in two towns, as well as on several lines of road between his own bazaar and that at Boralla.

This system was found open to objection, and it was deemed preferable to establish an extra bazaar rather than continue it.

80. Regarding the operations at Konewurda in the Ellichpur district referred to in paras. 71 and 72 of the Report for 1872-73, the Deputy Commissioner writes:—

"The Konewurda coppicing experiment cost Rupees 576-2-6. The proceeds of sale of wood were Rupees 566-6-0, and there is wood still in store of the estimated value of Rupees 1,500. Thus, when the whole is sold, and the money realized, there will be an estimated profit of Rupees 1,490. There is a great demand for the wood, and it is believed that the whole of the stock will be sold in the course of three months."

81. I inspected the Konewurda babool buns last October in company with the Deputy Commissioner, and was fairly satisfied with the result of the operations.

The stools of the trees felled had thrown out vigorous shoots, and where the soil was good, the seed sown had germinated freely. Whether a sufficient quantity of seedlings will survive the hot weather remains still to be seen. In future the notches will be dug to a greater depth, so as to give the young trees a better chance of living.

82. A lengthy correspondence, originating from Captain Mackenzie, has taken place during the year on the subject of the unsuitability of a large portion of the area set apart in the Poorna Valley by the Survey Department for babul buns. It was found that in many instances fields containing the most inhospitable of soils, on which nothing but the thorny shrub "*Moormat tee*" could thrive, had been selected, whilst "land of real value to this department, such as is to be found on the slopes of nullahs, great and small, quite inaccessible to the plough and useless for cultivation, whereon great quantities of babul had sprung up self-sown, had been included within the bounds of fields already under cultivation."

83. Orders have in consequence been issued for the revision of the areas set apart by the Survey Department for the systematic demarcation of lands on the sides of nullahs suitable for the growth of babul, and for the separation of such lands from the areas of fields assessed for cultivation; and arrangements are now being made for the carrying out of these orders.

84. Of other operations conducted during the year in the Ellichpur district, the Deputy Commissioner mentions two buns and a babul-avenue along 4 miles of road as having been pruned at a cost of Rupees 45-9-0; whilst babul seed has been sown for avenues along 102 miles of the principal lines of road.

85. Compared with 1872-73, there has been an increase in the revenue of the Ellichpur unreserved Forests of Rupees 36,214 14-5, attributable chiefly to the increased receipts from the Melghat nakahs.

Oomraotee.

86. About 100 acres of babul have been cut on the system described in para. 72 of the report for 1872-73. The total expenditure incurred on these operations amounted to Rupees 926-12-0, whilst from the sale of timber felled Rupees 1,207-2-6 were realized, and there remained at the close of the year a balance of wood in hand of the estimated value of Rupees 291-14-0. The shoots from the stools of the trees felled are reported to be from 6 to 8 feet high at the present time. Few failures occurred.

The result of the sowing of seed in notches has, I regret to say, not been so successful. A number of seedlings died during the month of March, and still more may be expected to die before the rainy season commences. It is hoped, however, that sufficient seedlings may survive to cover the area. In next year's operations the notches will be dug to a greater depth, and I expect to be able to report more favorable results in consequence.

87. Two babul buns are said to have been very successfully pruned.

The work was done by ordinary villagers with forest tools, and under the supervision of the Forest Daroga, the men being allowed the prunings instead of a money payment for their labor.

88. A large quantity of seed of trees indigenous in the Oomraotee hills was sown broadcast in No. 5 tract at the close of last hot weather.

The seed was selected seed procured from the Mélghat, and the Daroga estimates that about 25 per cent. of it germinated. He, however, expects a large number of the seedlings to die during the current hot weather.

89. These hills under the new scheme for the working of the district forests are being divided into 15 instead of 5 blocks, and when this is accomplished, more effectual measures will be taken for the reproduction of the forest, than it is possible to adopt under present arrangements.

90. There has been a decrease in the revenue of the district of Rupees 8,602-9-0, owing chiefly to a falling-off in the receipts from sale of grass and fruits on waste lands.

Akola.

91. Hundred acres of babul have also been cut in this district at an expenditure of Rupees 778-7-0.

The receipts from sale of wood amounted to Rupees 1,380-11-0, whilst there remained at the close of the year a balance of wood in hand of the estimated value of Rupees 1,052-0-0.

Reproduction here has been a greater success than in either Ellichpur or Oomraotee, due probably to the soil being of a better quality.

Owing to his only having lately taken over charge of the district, Captain Mackenzie is unable to furnish any information regarding the operation of the forest rules, but he believes them to have worked satisfactorily.

92. The decrease in the revenue of the district is merely nominal as the revenue for 1872-73 included the receipts from sale of grass for two years.

SOUTHERN DIVISION.

Booldana.

93. The area under waste, that is District Forest, has increased from 466 square miles 320 acres to 539 square miles 320 acres in consequence of a falling-off in cultivation.

94. Several babul buns have been pruned during the year. The Deputy Commissioner remarks that the outlay on such operations is never replaced by the sale of the prunings owing to wood being everywhere plentiful.

95. The inhabitants of this district are apparently beginning to take some interest in the protection of their forests from fire. Two fires of importance are reported to have broken out, which the people extinguished of themselves without any pressure from this department.

96. On the subject of the change in the agency for collecting dues on forest produce, Captain Hudleston remarks: "throughout the past year the fees for wood have been collected by the village officials, instead of through the agency of the forest officials. The financial result has been successful beyond expectation, and it is another proof of the advantage of using the popular village agency in these matters, and of studying the comfort and convenience of the people, instead of working a strange, and what in their view may be a harsh measure in a new-fangled and inconvenient way."

Thus, the fees realized last year by the forest officials were Rupees 1,381: this year the fees collected by village official agency amount to Rupees 2,892. The whole fee collections through both agencies have risen from Rupees 1,909 to Rupees 3,641.

97. The total revenue of the district has increased from 10,467-5-8 to Rupees 15,344-12-0. The difference of Rupees 4,877-6-4 is due to the sale proceeds of grass from uncultivated and waste lands having for the first time been credited to this department.

Formerly they used to form a portion of the land revenue.

Woon.

98. With the exception of some slight pruning operations, the district officer remarks that no extraordinary work has been undertaken.

99. From the returns received from the Taluk Forest Officers, the timber account is reported to have stood as follows:—

	Number of logs and goles of all descriptions and sizes.	Amount for which sold.		
		Rs.	A.	P.
Sold by Patels within their respective forest limits ...	11,317	1,189	10	0
SOLD BY TEHSILDARS AT THE TEHSIL DEPOTS.				
Unserviceable wood	2,326	211	0	9
Wood of all descriptions	4,910	1,359	1	0
Total...	18,553	2,759	11	9

The unserviceable wood referred to in the statement was sold by public auction, whilst a large quantity of the other wood was of an inferior quality, and had consequently to be disposed of to the best advantage.

100. Some hundreds of teak goles were cut at the close of the year, but were not brought to account, as there was no time to transport them from the forests to the depôts. They will be shown in the accounts of the ensuing year.

101. Captain Szczepanski complains of the insufficiency of his present forest staff, but I hope it will be found ample now that all forest operations are to be restricted to certain tracts each year, and not scattered over the entire area of the forests as heretofore.

102. The revenue of the district has risen from Rupees 32,631-8-4 in 1872-73 to Rupees 49,381-12-4 in the year under report.

The increase is said to be due for the most part to a change in the system of collecting grazing dues.

Formerly these dues used to be collected by direct Government agency, whereas now the right of grazing is annually sold by auction.

Basim.

103. The district officer reports himself satisfied with the working of the forest rules. He remarks that "there was little temptation to the bulk of the people to break the rules as firewood and other small stuff was free."

"Grazing rights being sold by auction, anything that went wrong had to be settled in the Civil Courts with the Contractor. This accounts for the small number of cases under the forest rules."

There has been an increase in the revenue of the district of Rupees 3,020-12-3, which is accounted for by the grazing lands in the Poosud talooq having been sold this year for the first time.

104. Annexed is a comparative statement of the revenue of the unreserved Forests district by district for the last two years.

Comparative statement of the revenue of the unreserved Forests for the last two years:—

Districts	1873-74.			1872-73.			Increase.			Decrease.			
	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	
Ellichpoor	87,267	4	0	51,052	5	7	36,214	14	5	...	...	...	
Oomraotee	49,494	12	7	58,097	5	7	...	...	...	8,602	9	...	
Akolah	29,633	0	8	64,194	11	2	...	...	...	34,561	10	6	
Booldana	15,344	12	0	10,467	5	8	4,877	6	4	...	...	...	
Woon	49,381	12	4	32,631	8	4	16,750	4	0	...	...	...	
Basim	9,853	13	11	6,833	1	8	3,020	12	3	...	...	...	Net increase.
Total ...	2,40,975	7	6	2,23,276	6	0	60,863	5	0	43,164	3	6	17,699-1-6

The difference between the figures pertaining to each district has already been accounted for.

The total increase in the revenue of the unreserved Forests amounts to Rupees 17,699-1-6.

PART II.—GENERAL.

HEAD I.

FINANCIAL RESULTS.

Financial results.

105. The following are the financial results of the year, compared with those of 1872-73:—

	Receipts.			Expenditure.			Surplus.		
	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.
1872-73...	2,56,563	3	3	83,056	9	11	1,73,506	9	4
1873-74...	2,61,147	7	0	85,609	5	4	1,75,538	1	8

There is thus in favor of the year under report an increase in the gross revenue of Rupees 4,584-3-9 and in the net revenue of Rupees 2,031-8-4, the expenditure of the department having increased by Rupees 2,552-11-5.

106. After making the necessary alterations in the receipts and disbursements of the year on account of transactions of previous periods, and of the difference between the value of stock on the 1st April 1873, and on the 31st March 1874, the net results, as shown in Form No. 28, amount to Rupees 1,77,380-4-9.

Comparison of regular estimate with actuals.

107. Compared with the regular estimate, the actuals show an increase under receipts of Rupees 31,772-7, and a decrease under expenditure of Rupees 13,857-15-1. Thus:—

1873-74.	Regular estimate.	Actuals.			Increase.			Decrease.		
		Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.
Receipts.	2,29,375	2,61,147	7	0	31,772	7	0	...	...	...
Expenditure	98,720	84,862	0	11	...	...	...	13,857	15	1

The difference in receipts is owing chiefly to an unexpected increase in the revenue of the Mélghat nakáhs, and in the proceeds from sale of grass in District Forests, whilst the difference in expenditure is due to a saving under nearly every head, but more particularly under Heads A-VI., and B-I. The saving under Head VI. is accounted for: (1) by plantation operations having been carried on much cheaper in the Mélghat than formerly, owing to the Gond corps having become so expert at work of this description; and (2) by little or nothing having been done under this head in south Berár.

The saving under B-I. is due to the services of Mr. Morrow having been dispensed with, and to his successor being an assistant of the lowest grade.

108. The outstandings—Rupees 4,085-5-5—shown in Form No. 23-A., seem to be large in comparison with the value of the timber sold, but nearly half of the amount was recovered in the months of April and May, and the balance is expected to be realized without difficulty. None of the other statements attached to this report would appear to require explanation.

PART II.—GENERAL.

HEAD 2.

GENERAL REMARKS.

Services of Mr. Morrow dispensed with.

109. The services of Mr. Morrow, late Assistant Conservator, southern division, were dispensed with on the 25th September 1873. Mr. Ballantyne relieved him on that date, and remained in charge of the division till the 21st December 1873, when, owing to bad health, he was obliged to leave the province on one month's privilege leave.

I myself then carried on the duties of the office until the arrival of Mr. Prevost on the 22nd January 1874.

Tour of Deputy Conservator.

110. During the year I have inspected every district in the province, and travelled altogether 2,562 miles—1,067 by dák and 1,597 by rail.

Health of establishment.

111. There has, I am glad to report, not been so much sickness among the members of the Mélghat establishment as last year. Mr. Ballantyne attributes this partly to the establishment having become acclimatized, and partly to the special medicines supplied to it by the medical department.

Services of Officers.

112. Mr. Prevost since joining has shown much activity and zeal in the performance of his duties, and I feel sure he will turn out a useful Forest Officer, and be a credit to the department.

Mr. Ballantyne is already known as a conscientious hard working officer. He has done good service in the Mélghat during the year, notwithstanding a temporary break down in his health.

I trust an opportunity will soon be afforded for promoting him from his present grade.

Of the subordinate establishment, the following are reported to have done especially good service:—

Ahmedali, Daroga, Mélghat.
Ibrahim Khan, Inspector, Mélghat bazaars.

113. I cannot close this report without recording the great loss the Forest Department has sustained in the Mélghat in the transfer of Captain Mackenzie from the Ellichpur district.

During the three years I have held charge of the Berar Forests—a period within which the whole system of working the Mélghat Forests has been revised and perfected, and consequently many changes distasteful to the inhabitants introduced—this officer has afforded me his fullest support, and, from his great influence with the hill tribes, made the successful introduction of all measures of conservancy a matter of comparative ease.

I have the honor to be,

Sir,

Your most obedient servant,

A. T. DRYSDALE,

Offg. Deputy Conservator of Forests,

Berar.

APPENDIX A.

Rules defining the rights and privileges of the inhabitants of the State Forests in the Southern Division.

1. The inhabitants of these forests will be allowed to fell, free of charge, for their own private consumption any of the unreserved descriptions of wood. No felling will, however, be permitted in closed tracts.

N. B.—The reserved and unreserved woods in the State Forests will be similar to those in the District Forests.

2. Reserved descriptions of wood for private consumption may be obtained on application to the Divisional Forest Officer, at the rates prescribed in the Supplement to the Forest Rules.

3. Export of wood, whether reserved or unreserved, will not be allowed.

4. Grazing will be permitted, except in closed tracts, under the terms of the rules in force in the Melghat. No cattle belonging to villages outside the forests will be allowed to graze inside the forests.

5. Grass may be cut anywhere throughout the reserves, except in closed tracts, and will be free for private consumption, but when exported, will be taxed at the rates prescribed in the Supplement to the Forest Rules. The tax will be levied through the Forest Establishment.

6. Minor forest produce will be disposed of village by village by public auction.

7. The Forest Department will in no way interfere with existing cultivation, but new fields will not be permitted to be taken up, except with the sanction of the Divisional Forest Officer.

8. Wood cut on cultivated land, or on land being prepared for cultivation, will be allowed to be used free for home consumption, but not for export. If an owner of such wood wishes to export it, he must obtain the special permission of the Divisional Forest Officer.

APPENDIX B.

List of Permanent and Temporary Establishments.

PERMANENT.

NORTHERN DIVISION.

				Rs.	A.	P.	Rs.	A.	P.
1	Deputy Conservator, 2nd grade	...	...	...		...	700	0	0
1	Sub-Assistant Conservator	...	pay	200	0	0	300	0	0
			personal allowance	100	0	0			

Office Establishment.

1	English Clerk	100	0	0	
1	Do.	70	0	0	
1	Do.	40	0	0	
1	Carkoon	50	0	0	
1	Do.	20	0	0	
2	Orderly Peons	12	0	0	
1	Native Doctor	50	0	0	
1	Compounder	10	0	0	
1	Bheestie	4	0	0	
1	Sweeper	7	0	0	
				363	0	0

Treasury Guard.

1	Duffadar	10	0	0	
4	Constables or Peons at 7 each	28	0	0	
				38	0	0

Mélghat—Byraghur Reserve.

1	Darogah, 2nd class	80	0	0	
1	Jemadar, 1st do.	35	0	0	
2	Do., 2nd do. at 25 each	50	0	0	
3	Watchers, 1st do. at 15 „	45	0	0	
3	Do., 2nd do. at 12 „	36	0	0	
12	Do., 3rd do. at 8 „	96	0	0	
				342	0	0

Mélghat Unreserved Forests.

1	Jemadar, 1st class	35	0	0	
1	Watcher, 1st do.	15	0	0	
1	Do., 2nd do.	12	0	0	
1	Do., 3rd do.	8	0	0	
				70	0	0

Ellichpur District.

1	Jemadar, 1st class	35	0	0	
1	Watcher, 1st do.	15	0	0	
1	Do., 2nd do.	12	0	0	
1	Do., 3rd do.	8	0	0	
				70	0	0

Oomraotee District.

1	Doragah, 1st class	100	0	0	
1	Watcher, 1st do.	15	0	0	
3	Do., 2nd do. at 12 each	36	0	0	
1	Do., 3rd do.	8	0	0	
				159	0	0

Akolah District.

		Rs.	A.	P.		
1	Darogah, 3rd class	60	0	0		
1	Watcher, 1st do.	15	0	0		
3	Do., 2nd do. at 12 each	36	0	0		
1	Do., 3rd do.	8	0	0		
					119	0 0

SOUTHERN DIVISION.

1	Assistant Conservator, 3rd grade	250	0	0

OFFICE ESTABLISHMENT.

1	English Clerk	50	0	0		
1	Carkoon	25	0	0		
2	Orderly Peons at 6 each	12	0	0		
					87	0 0

Garoo Mattergaon and Ghat Boree Reserves.

1	Darogah, 3rd class	60	0	0		
2	Watchers, 1st do. at 15 each	30	0	0		
2	Do., 2nd do. at 12 each	24	0	0		
2	Do., 3rd do. at 8 each	16	0	0		
					130	0 0

Pemgunga Reserve.

1	Jemadar, 2nd class	25	0	0		
1	Watcher, 1st do.	15	0	0		
2	Do., 3rd do. at 8 each	16	0	0		
					56	0 0

Khelapoor Reserve.

1	Darogah, 4th class	50	0	0		
1	Watcher, 1st do.	15	0	0		
1	Do., 2nd do.	12	0	0		
1	Do., 3rd do.	8	0	0		
					85	0 0

Buldanah District.

1	Darogah, 4th class	50	0	0		
1	Watcher, 1st do.	15	0	0		
1	Do., 2nd do.	12	0	0		
1	Do., 3rd do.	8	0	0		
					85	0 0

Bassim District.

2	Carkoons, at 20 each	40	0	0		
2	Watchers, 2nd class at 12 each	24	0	0		
6	Do., 3rd do. at 8 each	48	0	0		
					112	0 0

Woon District.

3	Carkoons, at 20 each	60	0	0		
3	Watchers, 2nd class at 12 each	36	0	0		
9	Do., 3rd do. at 8 each	72	0	0		
					168	0 0
	Total of Permanent Establishment				3,134	0 0

TEMPORARY.

Oomraotee District.

2	Watchers, 2nd class at 12 each	24	0	0		
10	Do., 3rd do. at 8 each	80	0	0		
					104	0 0

MELGHAT.

Nakah Establishment.

				Rs.	A.	P.			
1	Inspector	...	...	50	0	0			
1	Carkoon at 25 per mensem	...	...	25	0	0			
1	Do. at 20 „	...	...	20	0	0			
10	Do. at 15 each	...	...	150	0	0			
1	Do. at 12 „	...	...	12	0	0			
7	Do. at 10 „	...	...	70	0	0			
18	Peons at 7 „	...	...	126	0	0			
							453	0	0

Grazing Establishment.

1	Carkoon	...	...	25	0	0			
1	Peon	...	...	8	0	0			
							33	0	0

For four months.

3	Carkoons at 25 each	...	...	75	0	0			
3	Peons at 8 each	...	...	24	0	0			
							99	0	0
	Total of Temporary Establishments						689	0	0

APPENDICES.

FORM No. 15.

FOREST DEPARTMENT, BERAR.

Statement of Timber on hand on the 31st March 1874.

Name of Depôt.	Description of timber.	Quantity. No. of Pieces.	Quantity. Cubic feet.	Estimated selling rate.	Estimated value. Rs.	A.	P.	Total per Depôt. Rs.	A.	P.
				Rs. A. P.						
Peelee	Nants	35	81	2 0 0 each	70	0	0	3,482	12	0
	Pair Nants	243	243	0 4 0 do.	6	12	0			
	Small pieces	6,812	...	0 8 0 do.	3,406	0	0			
Kolsira	Babul branch pieces	50	...	1 8 0 per cart load of 12 maunds	1	8	0	1	8	0
Toonie	Trunk "	19	24	0 4 0 per cubic foot	6	0	0	24	0	0
	Branch "	900	...	1 8 0 per cart load of 12 maunds	18	0	0			
Sherwadi	Trunk "	41	209	0 4 0 per cubic foot	52	4	0	94	6	10
	Branch "	2,109	...	1 8 0 per cart load of 12 maunds	42	2	10			
Yaoli	Trunk "	63	177	0 4 0 per cubic foot	44	4	0	44	4	0
Yerlah	Trunk "	71	162	0 4 0 do.	40	8	0	60	8	0
	Branch "	1,000	...	1 8 0 per cart load of 12 maunds	20	0	0			
Hinganwadi	Trunk "	111	263	0 4 0 per cubic foot	65	12	0	67	4	0
	Branch "	51	...	1 8 0 per cart load of 12 maunds	1	8	0			
Kondewarda	Goles	4,197	...	3 8 0 per cart load	290	8	0	812	8	0
	Small pieces	13,077	...	2 0 0 do.	522	0	0			
Angar	Pieces of Babul	95	...	1 8 0 do.	2	13	7	2	13	7
Patroat	Teak pieces	3,907	...	25 0 0 per 100 pieces	976	12	0	976	12	0
Yeotmal	Goles of unreserved kinds	524	...	15 0 0 do.	78	9	7	78	9	7
Panalla	Teak goles	1,590	...	0 8 0 each	795	0	0	795	0	0
								6,440	6	0

A. T. DRYSDALE,

Offg. Deputy Conservator of Forests, Berar.

FORM No. 21.

FOREST DEPARTMENT, BERAR.

Annual Summary of Revenue and Expenditure of the different Divisions during 1873-74.

CLASSIFICATION.	Direction.			Northern Division.			Southern Division.			Total.		
RECEIPTS.	Rupees.	A.	P.	Rupees.	A.	P.	Rupees.	A.	P.	Rupees.	A.	P.
I.—Sale of timber brought to depôt by Government Agency	...	...	...	19,070	13	7	1,943	9	5	21,014	7	0
II.—Sale of timber, firewood, bamboos and charcoal removed from the forests by purchasers, including seigniorage	...	...	...	86,220	0	9	17,186	7	0	1,03,408	7	9
III.—Duty on foreign timber	...	...	...	...	...	...	...	...	...	...	...	...
IV.—Permit fees and rent of jungles and privileges	...	...	...	...	...	...	...	...	...	...	...	...
V.—Grazing dues	...	...	...	65,915	9	8	38,470	1	7	1,04,385	11	3
VI.—Sale of fruits, babul pods and other minor forest produce	...	...	...	10,596	14	4	13,457	14	9	24,054	13	1
VII.—Sale of confiscated drift and waif timber	...	...	...	180	6	2	18	5	0	198	11	2
VIII.—Fines and forfeitures	...	...	...	64	1	5	55	5	11	119	7	4
IX.—Miscellaneous receipts	...	...	...	2,161	11	0	5,804	2	5	7,965	13	5
Total Receipts...	...	...	...	1,84,211	8	11	76,935	14	1	2,61,147	7	0

EXPENDITURE.

A.—Conservancy and Working.

I.—Timber expenses for felling, cutting, clearing, sawing, and the transport of timber by land or water to depôts; also charges for storing, securing, watching, piling and arrangements for selling timber	This expenditure included under the northern division.			1,390	10	3	407	9	6	1,798	3	9
II.—Purchase of elephants, cattle, and dead stock, tools and plant				1,864	15	0	290	2	0	2,155	1	0
III.—Feed and keep of elephants and cattle				1,854	11	11	791	12	3	2,646	8	2
IV.—Rent of leased forests and seigniorage paid for timber felled in leased forests; shares of villagers and others in the revenue of forests				17,119	12	0	...	...	...	17,119	12	0
V.—Charges connected with the collection of revenue on grass, fruits, and miscellaneous forest produce				8,606	8	1	3,034	14	3	11,641	6	4
VI.—Plantations				6,203	3	0	285	2	0	6,488	5	0
VII.—Forest work, *viz.*, cutting of creepers, protection of forests or trees against fire, and other expenses for the conservancy and improvement of the forests; charges for selecting, marking and girdling of the trees to be felled				1,337	11	2	112	11	6	1,450	6	8
VIII.—Forest Survey, topographical and valuation survey to ascertain the contents of forests and annual rate of timber product				...	...	...	...	...	...	...	...	...
IX.—Experiments to test the value of timber of different kinds				...	...	...	...	...	...	...	...	...
X.—Communications, buildings, and minor works, fines, boundary pillars and posts, and boundary division paths				...	...	...	...	...	...	...	...	...
Total Conservancy				329	5	4	488	1	6	817	6	10
				38,706	12	9	5,410	5	0	44,117	1	9

B.—Establishments.

I.—Salaries	...	...	...	21,713	14	0	10,182	0	1	31,895	14	1
II.—Travelling allowances	...	...	...	3,982	7	10	2,330	4	6	6,312	12	4
III.—Contingencies	...	...	...	1,912	11	4	1,370	13	10	3,283	9	2
Total Establishment	...	...	...	27,609	1	2	13,883	2	5	41,492	3	7
Total of Expenditure	...	...	...	66,315	13	11	19,293	7	5	85,609	5	4

A. T. DRYSDALE,
Offg. Deputy Conservator of Forests,
Berar.

FORM No 22.

FOREST DEPARTMENT, BERAR.

Annual Abstract Account of the Cash transactions of the Forest Department in the Berars.

Year.	Heads of Accounts.	Rupees.			Total.			Year.	Heads of Accounts.	Rupees.			Total.		
		Rs.	A.	P.	Rs.	A.	P.			Rs.	A.	P.	Rs.	A.	P.
1873-74.	To cash in hand on 1st April 1873—							1873-74.	By expenditure of the department—						
	Northern division	2,577	12	1					Northern division... 66,315-13-11						
	Southern do.	150	6	3					Southern do. ... 19,293-7-5						
					2,728	2	4			85,609	5	4			
	„ Revenue received—								„ Remittances to State Treasuries—						
	Northern division...1,84,211-8-11								Northern division... 184,845-4-5						
	Southern do. ... 76,935-14-1								Southern do. ... 77,167-14-11						
		2,61,147	7	0						262,013	3	4			
	„ Remittances from State Treasuries—								„ Advances made—						
	Northern division... 66,658-2-11								Northern division... 9,508-0-4						
	Southern do. ... 22,026-5-6								Southern do. ... 4,338-8-0						
		88,684	8	5						13,846	8	4			
	„ Advances recovered—								„ Amount of cheques cancelled—						
	Northern division... 9,346-8-8								Northern division... 1,450-0-0						
	Southern do. ... 2,343-8-2								Southern do. ... 232-3-1						
		11,690	0	10						1,682	3	1			
	„ Amount of retrenchment—												3,63,151	4	4
	Northern division... 989-3-6								„ Cash in hand on 31st March 1874—						
	Southern do. ... 466-7-7								Northern division	2,351	9	5			
		1,455	11	1					Southern do.	951	8	2			
	„ Deposit—														
	Northern divison ...	687	8	9									3,303	1	7
	„ Recovery of overpayment—														
	Southern division	61	0	0											
					3,63,726	3	4								
	Total...	...		...	3,66,454	5	8		Total...	...		...	3,66,454	5	8

A. T. DRYSDALE,
Offg. Deputy Conservator of Forests, Berar.

FORM No. 23.

FOREST DEPARTMENT, BERAR.

Annual Statement of Outstandings and Liabilities of the Department on account of Contractors and Disbursers.

Divisions.	Department Debtor.						Department Crediter.						Balance due.			
	At commencement of year.		Recoveries in cash and value of supplies and work done during year.			At close of year.	At commencement of year.			Payments made during year.			At close of year.	To department (outstanding.)		By department (liabilities.)
			Rs.	A.	P.		Rs.	A.	P.	Rs.	A.	P.		Rs.	A.	P.
Northern Division.																
Forest Officers	.....		6,989	13	8	.....	395	3	2	6,838	0	4	.....	243	5	10
Deputy Commissioners	.....		2,556	11	0	.....	1,909	12	8	2,670	0	0	.....	2,223	1	8
Southern Division.																
Forest Officers	.....		1,979	12	4	.....	623	6	0	3,501	6	0	.....	2,144	15	8
Deputy Commissioners	.....		363	11	10	.....	512	2	6	837	2	0	.....	985	8	8
Total...	.....		11,690	0	10	.....	3,440	8	4	13,846	8	4	.....	5,596	15	10

A. T. DRYSDALE,

Offg. Deputy Conservator of Forests, Berar.

FROM No. 23-A.

FOREST DEPARTMENT, BERAR.

Annual Statement of Outstandings on Sale Accounts.

Division.	Outstandings at commencement of year.			Value of timber sold during the year.			Total.			Recoveries made during the year.			Outstandings.			Remarks.
	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	
Northern Division	2,295	2	0	18,832	11	5	21,127	13	5	17,749	6	7	3,378	6	10	
Southern Division	...	...	...	1,089	9	6	1,089	9	6	382	10	11	706	14	7	
Total ...	2,295	2	0	19,922	4	11	22,217	6	11	18,132	1	6	4,085	5	5	

A. T. DRYSDALE,

Offg. Deputy Conservator of Forests, Berar.

FORM No.

FOREST DEPARTMENT, BERAR.

Statement of Timber brought to Depôts from the different Forest Divisions during 1873-74.

Name of Division.	Forest.	Description of Timber.	Pieces.	Cubic feet.	Totals of each River. Pieces.	Totals of each River. Cubic feet.	Remarks.
Northern	Peelee	Teak Nants	247	393	49,018	2,158	
		,, Pair Nants	1,765	1,765			
		,, Small Pieces	47,006	.....			
	Antura	Babul Trunk Pieces	35	52	1,683	52	
		,, Branch ,,	1,648	.....			
	Kolsari	,, Trunk ,,	255	776	1,676	776	
		,, Branch ,,	1,421	.....			
	Toonie	,, Trunk ,,	126	238	1,152	238	
		,, Branch ,,	1,026	.....			
	Sonalla	,, Trunk ,,	76	52	520	52	
		,, Branch ,,	444	.....			
	Sherwadi	,, Trunk ,,	155	595	2,264	595	
		,, Branch ,,	2,109	.....			
	Yaoli	,, Trunk ,,	81	247	2,718	247	
		,, Branch ,,	2,637	.....			
	Yerla	,, Trunk ,,	136	294	1,636	294	
		,, Branch ,,	1,500	.....			
	Hinganwadi	,, Trunk ,,	140	283	791	283	
		,, Branch ,,	651	.....			
	Kondewardah	,, Goles	7,795	.....	31,930	.....	
		,, Small Pieces	24,135	.....			
	Angur	,, Trunk Pieces	510	.....	510	.....	
	Hewarkheir	,, Do. do.	303	.....	303	.....	
Southern	Yeotmahl	Teak Goles	993	.....	993	.....	
	Darwah	,, ...	975	.....	975	.....	
	Panalla	,, ...	2,067	.....	4,699	.....	
		,, Bullies	2,632	.....			
					100,868	4,695	

A. T. DRYSDALE,
Offg. Deputy Conservator of Forests, Berar.

(7)

FORM No. 25.

FOREST DEPARTMENT, BERAR.

Annual Timber Account for 1873-74.

Particulars.	Pieces.	Total.
I.—Stock in hand at the following depôts at the commencement of the year :—		
Peelee	5,060	
Chickulda	15	
Kondewardah	5,562	
Patroat	3,907	
Darwah	551	
Yeotmahl	839	
		15,934
II.—Timber received at depôts from the forests.		
Peelee	49,018	
Antura	1,683	
Kolsira	1,676	
Toonie	1,152	
Sonalla	520	
Sherwadi	2,264	
Yaolee	2,718	
Yerla	1,636	
Hinganwadi	791	
Kondewardah	31,930	
Angur	510	
Hewarkheir	303	
Yeotmahl	993	
Darwah	975	
Panalla	4,699	
		100,868
		116,802

Particulars.	Pieces.	Total.
I.—Timber removed by purchasers from depôts.		
Chickulda	15	
Peelee	46,988	
Antura	1,683	
Kolsira	1,626	
Toonie	233	
Sonalla	520	
Sherwadi	114	
Yaolie	2,655	
Yerla	565	
Hinganwadi	629	
Kondewardah	20,218	
Angur	415	
Hewarkheir	303	
Panalla	2,609	
Yeotmahl	1,308	
Darwah	1,526	
		81,407
II.—Timber lost.		
Panalla	500	
		500
III.—Stock in hand at the close of the year at the following depôts.		
Peelee 7,090	Sherwadi 2,150	
Kondewardah 17,274	Yaolie 63	
Patroat 3,907	Yerla 1,071	
Yeotmahl 524	Hinganwadi 162	
Kolsira 50	Angur 95	
Toone $\frac{719}{29764}$	Panalla $\frac{1590}{5131}$	34,895
		34,895
		116,802

A. T. DRYSDALE,
Offg. Deputy Conservator of Forests, Berar.

FORM No. 26.

FOREST DEPARTMENT, BERAR.

Statement showing the Amount realized on account of the different classes of Timber sold during 1873-74.

Divisions.	Number of logs sold.	Cubical contents.	Amount realized and due on account of timber sold.			Average amount per log.			Average cubical contents per log.	Average amount per 100 cubic feet.	Remarks.	
			Rs.	A.	P.	Rs.	A.	P.	Cubic Feet.			
Northern Division ...	75,964 pieces of various sizes.	Wood too small to calculate the cubical contents of	21,127	13	5	0	4	5	.....	.....	Pieces.	
Southern do. ...	5,443 pieces of various sizes.		1,089	9	6	0	3	2	.....	.....	Timber sold in previous years remaining unremoved at the commencement of the year ...	81,407
											Timber sold during the year	81,407
Total...	81,407	.....	22,217	6	11	0	4	4	.....	.....	Total...	
											Timber remaining unremoved	
											Balance removed from depôts by purchasers during the year. 81,407	
											Add amount lost 500	
											Total...	81,907
	Deduct—Amount due, but not realized during the year		4,085	5	5							
	Balance...		18,132	1	6							
	Add—Amount collected by District Officers		2,882	5	6							
	Total shown as revenue on account of timber sales		21,014	7	0							

A. T. DRYSDALE,

Offg. Deputy Conservator of Forests, Berar.

FORM No. 27.

FOREST DEPARTMENT, BERAR.

Statement showing the Amount expended on account of Timber received from the different Forest Divisions during 1873-74.

Name of Division.	Number of logs.	Cubical contents.	Timber expenses. Rs.	A.	P.	Conservancy expenses, cost of establishment, &c., of the department, excluding directions. Rs.	A.	P.	Total amount expended, including direction. Rs.	A.	P.	Average amount paid per log. Rs.	A.	P.	Average cubic contents per log.	Average amount paid per 100 cubic feet.	Remarks.
Northern Division	94,201	Wood too small to calculate the cubical contents of.	1,390	10	3	5,399	4	3	6,789	14	6	0	1	1	...	Cannot be shown as the cubical contents of the greater portion of the timber has not been calculated.	*Abstract rates per* 100 *pieces.* 1873-74. Rs. A. P. Timber expenses 1-12th Conservancy and Establishment ... 1 12 6 Direction ... 6 13 9 Total ... 8 10 3
Southern do.	6,667		407	9	6	1,522	11	5	1,930	4	11	0	4	7	...		
Total ...	1,00,868		1,798	3	9	*6,921	15	8	8,720	3	5	0	1	4	...		

* Only 1-12th of the expenditure under other Budget heads is added, because the proportion borne by the revenue under Head I. to the total revenue is as 1 to 12.

A. T. DRYSDALE,

Offg. Deputy Conservator of Forests, Berar.

FORM No. 28.

FOREST DEPARTMENT, BERAR.

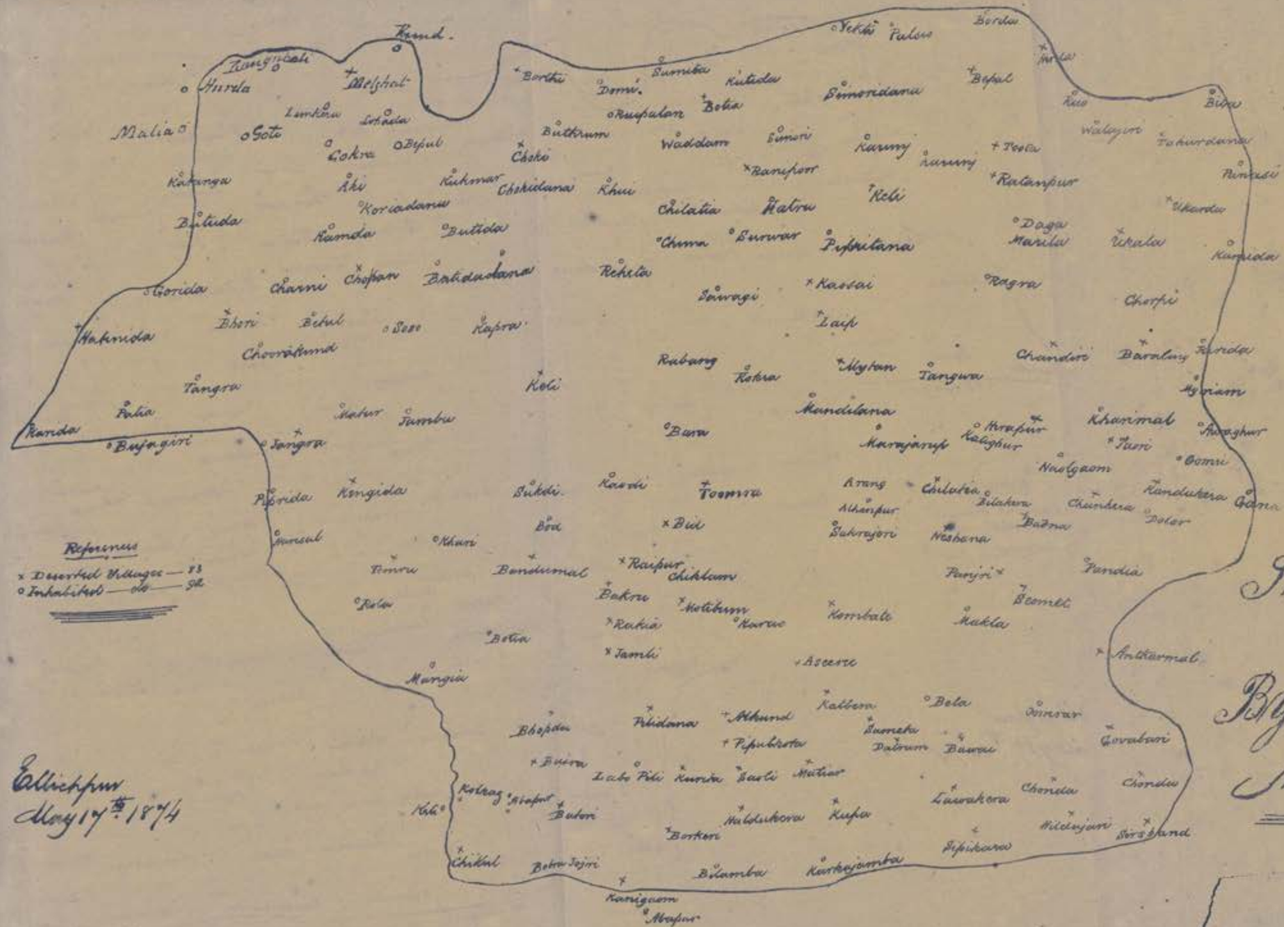
Annual Account of Forest Revenue for 1873-74.

Receipts.	Amount. Rs.	A.	P.	Disbursements.	Amount. Rs.	A.	P.
Amount of Revenue realized in 1873-74	2,61,147	7	0	Amount disbursed in 1873-74	85,609	5	4
Deduct.				Deduct—Amount.			
Amount realized on account of previous periods	2,295	2	0	Disbursed on account of transactions of former periods. ...	4,371	12	2
Balance...	2,58,852	5	0	Balance...	81,237	9	2
Add.				Add.			
Outstandings on account of the year sale account Rs. 4,085 5 5				Amount due for transactions during the year under review, but not yet disbursed	6,940	2	2
Minus for bad debts	4,085	5	5				
Value of year's transactions...	2,62,937	10	5	Real cost of the year's transactions...	88,177	11	4

	Rs.	A.	P.
Value of the year's transactions	2,62,937	10	5
Cost of the do.	88,177	11	4
	1,74,759	15	1
Add.—Difference between the value of stock at the commencement and close of the year...	1,873	1	3
Net results of the year	1,76,633	0	4

A. T. DRYSDALE,

Offg. Deputy Conservator of Forests, Berar.



Sketch Map of the Byragur Reserve Mailghat.

Ellichpur
May 17th 1874

Remarks by the Commissioner, Hyderabad Assigned Districts, on the Administration of the Forest Department for the year 1873-74:–

The area of the Reserved Forests is:

Northern Division	400	square mile
Southern „	232	„
Total ...	632	„

being 14 square miles less than in the previous year. This decrease is in the Ghat Boree reserve, and is due to the exclusion therefrom of cultivated tracts, as explained in para. 12 of the Report.

2. The Deputy Conservator is right in saying that no just comparison can be made between the reserves in the Mélghat and the unreserved Forests of other parts of India, and the sole cause of the misconception in the remark of the Government of India quoted by Mr. Drysdale is the word "village." With this word are associated all those "rights" and "privileges" with which we are familiar throughout the Bengal Presidency, but which are unknown here because of our system of Land Revenue Administration, which substitutes the word "field" for "village."

3. In a report recently forwarded to the Resident, No. 1507, dated 26th June 1874, I have taken pains to show how indispensable it is to discard from the mind the term "village" and all our associations with it before reviewing the proceedings of the departments in this Province which affect the land in any way. If we can induce the Government of India to do this, the mist which renders all we do obscure, and sometimes inexplicable will pass away, and our proceedings will become intelligible, and will I venture to think for the most part meet the approbation of the Government.

4. As a matter of fact, the Mélghat reserve is as literally a reserve as any forest in India. The few small patches of land cultivated therein do not in any way interfere with conservancy. The map shows 82 inhabited "villages" but these are groups of half a dozen bamboo and grass huts belonging to three or four families of hill Gonds and Koorkoos, who usually shift their habitations as they do their cultivation, which is in the proportion of 3½ square miles to 100 square miles of the reserve.

5. Where the exclusion of cultivation has been really necessary in the interests of the department, as in the Ghat Boree reserve, it has been done, and I have recently applied to the Resident for sanction to the compensation necessary, *i. e.* Rupess 425, to enable Mr. Drysdale to take up the remaining 6 fields in this reserve, their aggregate area being 141 acres.

6. Similar operations are now going on in the Garoo Mattergaon reserve of the Buldanah district, which contains 1,700 acres of cultivation. In para. 15 to 18 the Deputy Conservator explains his modification of the Pemgunga reserve, and the establishment of a new reserve in the Kinwut pergunnah of the Basim district. Both of these are free from cultivation and from rights of all kinds. With reference to the few villages in the Pemgungah reserve, which were taken on lease under the waste land rules, an endeavour is now being made to induce the lessees to take other land outside the reserve, and, it is to be hoped, they will accede to the arrangement.

7. The Kehlapore reserve—50 square miles—also contains three integral villages, leased under the waste land rules, a portion of three others, and an area in patches of about 300 acres: an arrangement similar to the above has also been proposed; and the Resident may rest assured that no means will be left untried to form this and the other reserves into continuous tracts of forest land without cultivation.

8. Four hundred and forty-seven persons were prosecuted before Magistrates for breaches of forest laws, of whom 341 were convicted, being an increase of 25 over the previous year. The offences were of a trivial nature and the punishments slight. Only one case was an aggravated one, the amount embezzled was insignificant, but during the trial it came out that the Deputy Conservator's head clerk, his Serishtadar, some wood bazaar Mohurrirs, and certain traders from the plains, had all combined to defraud Government. I am happy to say all met with their deserts: a wood trader was fined Rupees 500; two Mohurrirs were, respectively, sentenced to seven and three years' imprisonment; while the Serishtadar came in for six years, and the head clerk for three years.

9. Since the above was discovered, the Deputy Conservator has taken measures to induce honesty and to diminish fraud by giving (with the Resident's sanction) to the Mohurrirs 2 per cent. on their collections in addition to their pay; by making each furnish security to the extent of Rupees 300, and by the various other means detailed in his 27th para., which I think will be attended with good results.

10. During the year, the area protected from fire was 337,200 acres, being an increase on 1872-73 of 79,280 acres, while the cost of protection diminished by Rupees 315, the expenditure on this account being Rupees 685, against Rupees 1,001 in the previous year.

11. The Resident will, I am sure, be gratified with Mr. Drysdale's account of the Raepoor block. The Gond corps are doing really good service; and there was not a single fire in this reserve. Natural re-production, too, is marked, for fine young trees are springing up in all directions.

12. The southern reserves were not free from fire, and this is due almost entirely to the carelessness and inefficiency of the late Assistant Conservator, who is no longer in Government employment.

13. The area under plantations in 1872-73 was 721 acres, to which were added 539 acres during 1873-74, making a total of 1,260 at a cost of Rupees 16,049: it is to be regretted that no means can be devised for protecting the teak seedlings from damage by field rats, which are most destructive.

14. Mr. Drysdale's remarks in respect to the Oomraotee head-quarter plantation are just: the almost total absence of soil must be a bar to success, but it would serve, I think, for a Babul plantation, and as such, it might in time pay its expenses, for even the prunings of Babul command a ready sale.

15. The thinning operations resulted in an out-turn of 46,988 pieces of timber of small dimensions, which realized Rupees 18,832, while bamboos and other produce brought in Rupees 3,406. In the southern division the realizations were only Rupees 645.

16. The road from Ellichpur to Peelee for wheeled traffic, which I recommended four years ago, and which has recently been sanctioned, will soon pay the cost of its construction; it will completely open up the Mélghat, and will secure for the Berar valley much of the timber which now, from want of such an outlet, finds its way to Boorhanpur and Nimar.

17. *Unreserved Forests.*—The area occupied by fuel reserves and Babul plantations at the close of the year was 3,726 square miles, 77 square miles having been added in 1873-74, during which block No. 2 of the Mélghat unreserved Forests was opened and worked: the result was a sale of 182,106 pieces of timber, which brought in Rupees 27,340. Block No. 1 was allowed almost complete rest: five-sixths of the latter and two-thirds of the former were saved from fire at a cost of Rupees 102: only one fire occurred in each block.

18. In para 75 of his report, the Deputy Conservator mentions that the Koorkoos have only one cause for complaint, namely, that large quantities of teak and other forest produce are brought to the Mélghat wood bazaars from Malgoozaree Estates in the Baitool and Nimar districts of the Central Provinces and are sold at prices far below those at which the Koorkoos can afford to

sell. I agree with Mr. Drysdale that it is not fair we should prevent this: owners of private Estates in the adjoining provinces, who thus use our roads and bazaars, should pay dues which shall put them on an equality with the inhabitants of the Mélghat.

19. The total duty on timber and other forest produce exported from the Mélghat unreserved Forests during the year was Rupees 51,022, being an increase over 1872-73 of about 20,000 Rupees: this is due to a better demand for unreserved timber; to reduction of duty on certain articles, and to better management of the "nakahs" or outposts.

20. The financial results of the year's operations are as follows:—

	Receipts.			Expenditure.			Surplus.		
	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.
1872-73	2,56,563	3	3	83,056	9	11	1,73,506	9	4
1873-74	2,61,147	7	0	85,609	5	4	1,75,538	1	8
Increase ...	4,584	3	9	2,552	11	5	2,031	8	4

21. Mr. Drysdale's tribute to the services afforded to the department by Captain Mackenzie while Deputy Commissioner of Ellichpur, is just and well merited. Mr. Drysdale is himself an excellent officer, and I can only hope, in the interests of this administration, that he may long hold his present charge: the good judgment with which he and Mr. Ballantyne have conducted matters in the Mélghat has gained the department the good-will of the hill people. I have reason to speak confidently of the good understanding which now prevails; and knowing how much time, and tact, and good temper, have been required to bring this about, I earnestly trust that Mr. Drysdale's promotion may not involve his removal to another charge.

(Signed) W. NEMBHARD, *Lieut.-Colonel,*
Commissioner,
Hyderabad Assigned Districts.

No. 987.

Remarks by the Resident at Hyderabad on the Report of the Forest Department for the year 1873-74.

THE Commissioner having forwarded this Report with his own remarks reviewing it, the Resident need do little more than barely advert to some of its noteworthy points.

2. The area of the State Reserves was diminished by 14 square miles in consequence of the Ghat Boree Reserve having, on account of extensive cultivation within its limits, been cut into blocks and made into compact forest by excluding cultivation—a process to which it appears likely that other Reserves will have to be subjected, as recent inspection has revealed large breadths of cultivation within them. For the greater part of the year, this division was under the charge of an Assistant Conservator who systematically neglected his duty. As he has lately been removed from the service, under orders from the Government of India, no more need be said on this subject.

3. The success which has attended the efforts of the department to exclude fires from the Melghat Reserves is satisfactory; and paras. 31 to 38 show that some credit is due to the department, for, as Mr. Drysdale observes, "there is nothing easier than to burn jungle without being detected, and, consequently, if the people had any grudge against the department, or were in any way inclined to oppose it, as they would be if vexatiously oppressed, this is one of the first things they would do."

The Reserves of the southern division have not been equally fortunate, but this is said to be mainly the result of no steps having been taken to protect them from fire until a new Assistant was placed in charge of the division at the close of the year.

4. With regard to the area under plantations, an increase of 539 acres was added during the year, making a total of 1,260 under cultivation. The teak seedlings suffered serious damage from rats. The Deputy Conservator's account of the work going on in plantations is interesting.

5. The Commissioner anticipates that the road for wheeled traffic from Ellichpur to Peelee, which has lately been sanctioned, will soon pay the costs of its construction. This may be an over sanguine estimate; but in respect to the advantage and want of a road which "will completely open up the Melghat" and "secure for the Berar valley much of the timber which now, from want of such an outlet, finds its way to Boorhanpur and Nimar," Mr. Saunders entertains no doubt.

6. In the opening sentences of the report, the Deputy Conservator has alluded to a revision of the District Forest Rules which took place during the year. He observes that "the principal changes effected by them are the employment of village officials for the collection of forest dues; the withdrawal of duty on certain items of minor forest produce that used formerly to be taxed, and the reduction in the rates of duty on reserved descriptions of timber:" a scheme for working District Forests on rotation under the above rules is also noticed. But these changes, it must be added, were not brought into force till the close of the year under report. It is believed that they will be successful in a fiscal point of view and render more popular the aims of the Forest Department.

7. The financial results of the year's operations are satisfactory; and Mr. Saunders notes especially the increase in the export receipts on timber and other forest produce exported from the Melghat unreserved Forests; the three causes assigned for this increase being: (1) a better demand for unreserved timber; (2) a reduction of duty on certain forest produce, and (3) better management of the 'nakahs' or out-posts.

8. On the subject adverted to in para. 75 of the Forest Report and in para. 18 of the Commissioner's review, Mr. Saunders observes that the Government of India have been addressed with a view to the re-imposition of the duty on timber and forest produce brought to Melghat wood bazaars from Malgorzaree Estates in the Baitool and Nimar districts of the Central Provinces.

9. Prosecutions for breaches of forest laws were slightly in excess of those recorded in the previous year, but they are not numerous, and grave infractions are rare.

10. On the whole, the Resident thinks that the administration of the Forest Department during the year has been conducted with judgment and success—except in the southern division; and he concurs in the commendation passed by the Commissioner on Mr. Drysdale's services. Mr. Ballantyne's knowledge and exertions have also been valuable.

(By Order.)

G. H. TREVOR,

Second Assistant Resident.

HYDERABAD,
8th September 1874.

Extract from the Proceedings of the Government of India in the Department of Revenue, Agriculture and Commerce,—Nos. $\frac{39}{1360-1373}$, *dated the 19th December 1874.*

[FORESTS.]

READ—

A letter from the Resident at Hyderabad, No. 36, dated 8th September 1874, forwarding the Annual Report of Forest Administration in the Hyderabad Assigned Districts for 1873-74.

RESOLUTION.

The Governor General in Council observes that in 1872 the demarcation of the Melghat Reserves was fully discussed, and approval conveyed (in this Office letter No. 1438, dated 11th December 1872) to a set of rules defining the rights and privileges of the inhabitants, the result of which was that the proposal to diminish the reserved area and to cut it up into a number of smaller plots was abandoned, and it was decided to leave the Byragarh Reserve intact with all the villages in it, the inhabitants continuing to enjoy, with few exceptions, their former privileges in the forests.

2. Subsequently, in passing orders on the annual report for 1872-73,* the Government of India repeated the suggestion to preserve more strictly a smaller area in places where population is least affected, adding that the reserves in the Melghat appeared to be much on the same footing as the unreserved forests of other parts of India.

* No. 1279, dated 3rd November 1873.

3. The Commissioner of Berar and the Deputy Conservator of Forests, in the present report, endeavour to disprove the comparison made between the Melghat reserve and the unreserved forests in other provinces. But on a reference to the sketch map which accompanies the report, it appears that there are 92 inhabited villages in the 400 square miles of the reserve; the area of these villages is not anywhere stated, but in paragraph 10 Mr. Drysdale estimates the aggregate extent of cultivated land and waste required by them at 108 square miles. Within this area the villagers can at pleasure take up land anywhere for cultivation, except where shishum or teak is growing†; they are further permitted by the rules to graze or cut grass all over the reserve, except in any defined area reserved for special purposes, and to cut for home consumption all woods except the three specially reserved kinds, *viz.*, teak, shishum, and tiwus, as well as to collect all minor forest produce.

† Rule VI of the rules in Appendix A of the report for 1872-73.

4. With so large a population in the reserve, which has apparently increased during late years, it is not easy to understand how the Byragarh forests can be classed with the reserves in other provinces of India, including as a rule, a few villages only, the inhabitants of which are employed in forest work. Colonel Nembhard, the Commissioner, explains in paragraph 3 of his note accompanying the report the difference between the village system of Upper India and the field system of Berar, but his remarks do not seem to be in point, for it is clear from all proceedings relating to the Melghat, that the Kurkus have enjoyed and are enjoying extensive privileges, not on their fields only, but over their entire village areas.

5. The discussion, however, whether the Melghat forests are in the same position as the reserved forests of other provinces of India, is not of much practical importance, for two facts are recorded in the present report which indicate most favourable progress towards the conservancy and improvement of these forest tracts. Population has gradually shifted towards the north-west corner of the reserve, only a few inhabited villages remaining in the south-eastern

portion, which is higher and better wooded; and in this manner it may be possible eventually to concentrate the population in the more fertile lands adjoining the Kapra stream and its feeders, and then to exclude this tract from the reserve altogether.

In 1873-74 Mr. Drysdale succeeded in protecting the entire reserve from fire, after having protected the Raipur block (19,200 acres) for five years, and seven-eighths of the entire reserve in 1872-73. This fact is of great importance; it proves the influence which he has been able to exercise over the Kurkus, while at the same time it gives evidence of the cordial support which his administration has received from the civil officers. The Commissioner of the Assigned Districts, in his review of the report, as well as in a separate letter received in September last, remarks that Mr. Drysdale has gained the good will of these people, that the Kurkus regard the Department as their mainstay, and that they are happier and far better off than before.

6. Nothing could be more favourable than such evidence of progress, and the Government of India cordially endorses the commendation of Mr. Drysdale's services by the Resident. It may be assumed from the present report, as well as from the remarks on it by the Resident and Commissioner, that the rules of 1872 for the Melghat Reserve have worked well. In December 1872, a report upon their working was asked for after the lapse of one year. No separate report has been received, but the documents now under review may be accepted as evidence that the rules are working well, and that they need not at present be modified.

7. The exclusion of fire seems to a great extent to have been effected by the employment of a cooly-corps composed of Gonds who have settled (from the Betul district) in a village near Pili in the Sipna valley, and are available for planting and other forest work. This arrangement, which is in accordance with a suggestion originally made by the Resident, is an excellent one, and is recommended to the attention of Forest Officers in other provinces.

8. A large proportion of the area of the other reserves was, during the last year, for the first time protected against fire, and in addition to these a considerable part of the two blocks of the Melghat not included within the reserve (which were opened for the cutting of teak and other reserved woods in 1872-73 and 1873-74) has been saved. The total area protected last year was 366,000* acres, and this has been effected at the incredibly small cost of Rs. 685, against Rs. 1,001 expended for the protection of 257,920 acres last year. This is a most encouraging result, and His Excellency in Council desires to commend it to the attention of Forest Officers in other provinces.

* In paragraph 30 of the report the area is incorrectly stated to be 337,200. The heading of the statement is also not correct, as only the three first reserves are in Melghat.

9. The effect which Mr. Drysdale reports the protection from fire has had upon the growth of seedlings and underwood, in the place of the rank grass that keeps down self-sown seedlings while it feeds and spreads any fire that may break out by accident, is most encouraging both in the Melghat and the southern reserves. Such visible improvement in the state of the forests entrusted to his care must be as great a reward to a forester wedded to his profession as any amount of praise which Government may bestow on him.

10. In plantation work also success is recorded in the report under review. The area under plantations at the close of 1872-73 was 721 acres, and this has during the last year been increased to 1,260 acres, which have cost altogether Rs. 16,049, or only about Rs. 12¾ per acre. Teak and babul are the principal trees in these plantations. It is not, however, said whether the whole of the area is stocked. This should be distinctly stated in future reports, and before the end of the current year all plantations should be carefully examined, and all areas not sufficiently stocked should be excluded from the statement which is to accompany next year's report, proper explanations being given in each instance. Such areas, which having been included in last year's return, may have to be excluded, should be exhibited in a separate column.

11. It should also be explained in the next report what measures have been taken to give effect to the orders of the Government of India, contained in paragraphs 15 to 20 of the review of the report for 1872-73. The plan which Mr. Drysdale has doubtless elaborated, in accordance with paragraph 15 of those orders, for gradually stocking the extensive blanks of the

Melghat Reserve, and for increasing the proportion of teak in certain portions of that forest, should also be explained. And the success which has attended the system adopted by him of sowing teak in notches should likewise be detailed in every year's report.

12. In paragraph 45, Mr. Drysdale refers to the darker colour and more robust growth of seedlings raised from Burma seed. This is an important result, and the experiment should be continued, the further development of plants raised from Burma seed being reported in future annual reports. The introduction on a large scale of the Himalayan Cypress and of the Kattang Bamboo on the Chikalda plateau, which has already proved successful, will be of great value.

13. In paragraph 64 of the report, Mr. Drysdale states that the delay in marking off the Byragarh Reserve into blocks and compartments is owing to the non-receipt of the topographical survey maps on the one-inch scale. His Excellency in Council directs that Mr. Drysdale should place himself in communication with the Superintendent of Forest Surveys, and obtain the advice of that officer as to the entry in these maps of the boundaries, blocks, and compartments of the reserves in both North and South Berar.

14. In the forest report for 1872-73, the area of the unreserved forests was said to be 9,638 square miles, including 6,050 square miles of fuel reserves in the Omraoti district. In this year's report the latter are only entered at 60 square miles, and the total area at 3,648 square miles. There was probably a mistake in the statements of 1872-73, which should be explained in next year's report.

15. The teak in the unreserved forests of the Melghat continues to be cut on the 15 years' rotation commenced in 1872. It is cut under certain rules by the Kurkus, and is brought by them to the bazars outside the forests, where duty is levied. The yield of blocks 1 and 2, and the duty realized on that account, are reported to have been as follows:—

1872-73	... Block No. 1,	... 107,573 pieces,	realizing Rs.	11,551 as duty.
1873-74	... „ „ 2,	... 182,106 „	„ „	27,340 „

Other kinds of timber and minor forest produce have been exported under similar arrangements from the whole of the unreserved forests, and the duty realized on that account has been—

1872-73	... ...	Rs. 29,804
1873-74	... ...	„ 51,021

These figures, as well as the Berar forest revenue generally, indicate the steady increase in the demand for wood and other forest produce in the Purna valley. Of bamboos alone the export has risen from 199,700 to 967,200 pieces.

16. In paragraph 8 of the orders on the report for 1872-73, a hope was expressed that the operation of the rule permitting the cutting of bamboos and unreserved woods all over the Melghat would be watched. His Excellency in Council trusts that this has not been overlooked. It is well known that teak cannot live and thrive by itself, but requires bamboos and other trees to keep the ground moist and cool. If the Department succeeds in stocking the Melghat Reserve completely with teak and its associates, and in improving the soil by keeping out fires, the result will be that one acre of completely stocked and really productive forest, will yield more teak, bamboos, and other wood per annum than 10 to 20 acres, or even a larger area incompletely stocked. This in itself furnishes a strong argument in favour of concentrating the operations of the Department upon limited areas.

17. The experiment to husband the present resources of the unreserved forests in the Melghat, by cutting the teak in rotation, is a measure in the right direction, and seems to be feasible, for these forests form one continuous area, the protection of which is facilitated by their geographical position between the Chikalda hills and the Tapti river. The success in excluding fires from the two open blocks is praiseworthy, but it cannot be expected that their condition will be materially improved on the soil and climate of the Melghat, if bamboos and other trees are allowed to be cut promiscuously.

18. The financial results of the year are favourable, the surplus being slightly in excess of that of 1872-73.

19. The figures, as reported by the Deputy Accountant-General in the budget statement, are—

Receipts	...	Rs. 2,63,256
Charges	...	„ 85,640
Surplus	...	Rs. 1,77,616

20. In the arrangement of future reports, the repetition of the main heads should be omitted. The classification is as follows, and may be retained :—

INTRODUCTION.

PART I.—SPECIAL.

Head I.—State forests and leased forests.
Section. 1.—Area, boundaries, descriptive account.
„ 2.—Requirements of surrounding population, &c.
„ 3.—Protection.
„ 4.—Management and improvement.
„ 5.—Yield and working.
Head II.—Unreserved or District forests.

PART II.—GENERAL.

Head I.—Financial results.
„ II.—General remarks.

21. Besides Mr. Drysdale, who has already been mentioned, the acknowledgments of the Government of India are due to Captain Mackenzie on account of the support he has afforded the forest administration in the Melghat, and to Mr. Ballantyne for the good services he has rendered.

ORDER.—Ordered that a copy of this Resolution, and of the report which it reviews, be forwarded for information and guidance to the Resident at Hyderabad, and for information to the local Governments and Administrations noted on the margin, as well as to the Superintendent of Forest Surveys.

Madras.
Bombay.
Bengal.
North-Western Provinces.
Punjab.
Oudh.
Central Provinces.
Burma.
Mysore and Coorg.
Ajmere.
Assam.

Ordered also that a copy of the same, and of the reports of 1871-72 and 1872-73, with the orders passed thereon, be forwarded to the Foreign Department for information.

Report by the Superintendent of Forest Surveys on the progress of the Survey of the Dehra Dún Forests for the season 1873-74.

My former report was submitted on the 1st August 1873.

Employment of the latter portion of last recess in survey of the Dehra station.

I employed the remainder of last recess in completing the computation of the work done during the previous field season, and when the heavy rains broke, I commenced a survey of the station of Dehra on the scale of 12″=1 mile for the purpose of instructing my establishment in traversing and plane-tabling.

The compilation of this was not completed when we took the field. Captain Thuillier, R.E., is about to undertake the survey of the station with his party of the Great Trigonometrical Survey, and I propose therefore to finish up what we did as far as it goes, and make it over to him so that our labor may not be thrown away.

2. Mr. G. K. Allnutt, who had previously been employed in No. I party of the topographical survey, joined me on the 8th September, and I obtained several additions to my native establishment, a few being men who had formerly been in the Survey Department and the remainder being intelligent lads and settlement amíns whom I picked up in the station.

Mr. Allnutt joined.

Additions to Native establishment.

3. The Principal of the Thomason Civil Engineering College sent me up 3 men, whose services however I could not avail myself of as reported in my No. 157 of the 30th November last, to the address of the Under Secretary.

Men from the Thomason College.

Major Lang however afterwards sent me a good man (Burkut-oollah Khan) who joined me on the 14th November, and whose work has so far turned out satisfactorily.

4. On the 1st November I commenced to move into camp.

Moving into camp.

I sent Mr. Chill to the detached Forest of Dholekote, and Mr. Allnutt to that of Chandpur. Each was accompanied by 5 native surveyors, and the necessary chain and flagmen, &c., his orders being to undertake the plane-tabling of the ground allotted to him, and to instruct the native surveyors who were placed under him for this purpose.

Dholekote and Chandpur.

Mr. Reynolds proceeded with the rest of the establishment to Barkala, a village situated below the Sewaliks, and about half-way between the Mohun Pass and the Jumna.

5. I joined the camp at Barkala on the 7th November, and immediately distributed the native establishment over the main water-courses "Raus" of the Sewaliks on either side of camp, with orders to traverse them from the boundary line fixed last year, to as near the watershed as they could measure.

"Rau" traverses.

Offsets were not taken, the object being to obtain as quickly as possible a number of fixed points in the bed of each "rau" for the guidance of the plane-tablers.

To close these traverses, small peaks overlooking the "raus" were selected, from which three or more trigonometrical stations were visible, and these peaks were afterwards interpolated on the trigonometrical stations by myself or Mr. Reynolds, and subsequently by some of the more intelligent of the native surveyors, who were instructed by us.

Interpolation of their heads.

A few of the "rau" traverses were executed by theodolite, and a few by prismatic compass, but I soon abandoned both these methods in favour of a circular card protractor mounted on a plane table, the use of which was suggested to me by Captain Thuillier, R.E.

Use of the card protractor.

This instrument is exceedingly simple and gave very good results.

The field books were sent into office at Barkala as the traverses were completed, and the results were immediately computed out by Mr. Reynolds, assisted by 2 or 3 native boys whom he had instructed. The traverses, amounting in all to 227 miles, were then plotted on the plane-table sections.

As soon as the main streams had been thus surveyed, the principal branches were similarly traversed, and were plotted on the plane-table sheets, but these were not computed.

Branches of main "raus."

The number of miles thus surveyed and plotted was nearly 180.

This system of work was continued round both ends of the Western Sewaliks, and on to the northern side, until the whole area was well covered with traverses, and the ground was then ready for the plane-tablers who, however, commenced work in the Sewaliks directly they had completed their surveys of the detached forests, and long before the whole of the traversing was completed.

Amount of correction on "Rau" Traverses.

I consulted Colonel Walker on the subject of the amount of error which might be admitted into the "rau" traverses.

I represented that the men were young hands, and the ground very rough, with a general slope towards the watershed, and that as the work was all inside the boundary, and merely executed to enable us to represent the natural features with greater precision than could be obtained from the plane table alone, extreme accuracy was perhaps not necessary.

Colonel Walker thought that a sufficiently good result would be secured if the correction were brought within 10 per 1,000.

I append a list of the "raus" thus traversed shewing the correction applied to each. (List marked A.)

Experience has shewn me that when the error was as large as that named above, the surveyor had usually made some gross error, such as reading the bearing of some short line 180° wrong, or miscounting the number of chains measured; and that if such a large correction had to be applied, it was not due to the accumulation of small errors throughout the work. Where errors of this kind occurred they were detected by the plane-tablers, and the computations were revised.

I think that the corrections on work of this kind may be kept within 6 per 1,000.

Ambari and commencement of plane-tabling in the Sewaliks.

6. On the completion of the plane-tabling of the Forest of Dholekote, Mr. Chill took up that of Ambari, and he and Mr. Allnutt subsequently commenced the Sewaliks.

On the 3rd January Mr. Reynolds took up a plane-table section in the Sewaliks, and I remained myself in charge of the office at Barkala, and of the computations which were being there worked out.

Mr. Hall and Mr. Marten joined.

7. On the 25th January Mr. A. W. Hall, a student from the Thomason College, was sent to me by Colonel Walker, to whom he had applied for employment, and on the 14th March, Mr. T. S. Marten, formerly of the Revenue Survey, joined me.

Boundary traverses run in the eastern sub-division.

8. I had some difficulty at first in keeping the rau-traversing and computations sufficiently ahead to supply the plane-tablers, but as soon as I got over this difficulty, and I could spare any native surveyors, I sent them to traverse by theodolite the boundaries of the eastern sub-division; the remainder as they could be spared were placed under Mr. Reynolds or under Messrs. Marten and Hall, or sent to run rau-traverses in the Eastern Sewaliks.

The work continued in this manner until nearly the close of the season, when Mr. Reynolds and I proceeded to different parts of the eastern sub-division, for the purpose of connecting the boundary traverses with the triangulation.

These traverses have not yet been computed, but their length is 280 miles.

A further report on them will be made hereafter.

Two small pieces of boundary traverse on the western side were computed out, and the results are shewn in the table marked B.

Rau-traverses in the Eastern Sewaliks.

9. Ninty-nine miles of traverses have been carried up raus of the Eastern Sewaliks, but the heads of them are not yet fixed, and so they cannot now be computed.

Combination of European and native labour.

10. I have reason to feel well satisfied with my attempt to combine European and native labour in this survey.

The system adopted has been to hand over to the European surveyor a plane-table containing all the work on that portion of ground which has been computed and plotted.

He has 5 or 6 natives under his orders, on to whose boards he plots a portion of the detail which has been given to him, and he then sends them to fill in the drainage, &c.

He afterwards transfers to his own board the work done by his native assistants, and then going himself on to the ground he tests the accuracy of their work, and sketches in the hills over it.

I have found this system to answer exceedingly well. Working on a large scale as we are, the amount of detail obtained thereby could never be put in by European surveyors alone. It would make the work so much more expensive and tedious, and native surveyors can, if properly looked after, be taught to do this kind of work almost as well as Europeans. Some of my natives have made very good progress indeed; they are commencing to put in contours, and are quite competent to do all the plane-tabling on flat ground intersected with ravines.

The northern slope of the Sewaliks lying below the precipitous hills has been done entirely by them, the officers in charge having meantime been plane-tabling the hilly ground above. Of course a careful examination is necessary before the work of the native surveyors is finally passed.

Visit by Colonel Walker, R.E.

11. Colonel Walker visited me in camp on the 29th December, and remained during the 30th and 31st. He has given me many opportunities of consulting him during the progress of the survey, and on the 17th June he came down from Mussourie, and inspected all the work that I had brought in.

My best thanks are due to him for the advice he has at all times so readily afforded to me.

Record of forest growth on the field sheets.

12. In order to collect as much information as possible during the progress of the topographical survey, I caused a record of the forest growth to be made on the original field sheets in the following manner:—

Colors were selected for the principal kinds of trees, and numbers from 1 to 4 were written in these colors to indicate the quality of the growth.

The numbers expressed the following classes, *viz.*:—

1. Dense forest.
2. Forest less dense than No. 1, but in which the tree-covered portion exceeds that which is bare of trees.

3. Very thin forest in which the bare portion exceeds that which is covered with trees.
4. Bare patches, or such as carry so few trees that they may be considered bare to all intents and purposes.

I had bare patches traversed round with the plane-table, and made an attempt to get boundaries between the other classes sketched in.

The result is, I think, a very valuable record, which will enable the working plan officer to see at a glance where the best timber is situated; but I hope to improve on it next season.

Working plan and Mr. H. C. Hill joined.

13. As I still have charge of the framing of a working plan for these forests, and as the superintendence of a large and inexperienced survey establishment absorbs the whole of my time, I applied for the services of another officer.

Mr. H. C. Hill, Assistant Conservator of Forests, was given to me for the purpose of assisting me with the working plan, and joined on the 17th March.

Grazing in the forests, and employment of Mr. Hill.

14. I had proposed that instead of opening the whole of the sâl forests for grazing, a portion only, which must be sufficient for the requirements of the inhabitants, should be given up for this purpose, and that the remainder should be strictly preserved.

My intention was to ascertain the amount thus left available for conservancy, and to select it so as to include as good forest as possible, and to give the villagers a minimum of inconvenience.

I suggested this course to the Conservator, who endeavoured to obtain the orders of the North-West Provinces Government on the subject.

Had these orders been given when Mr. Hill arrived, I should have employed him on the selection of the portions to be preserved, and on a proposal for their treatment; but owing to opposition on the part of the civil officers, the question is not yet decided.

I therefore directed Mr. Hill to lay out the southern boundary of the good sâl forest on the north of the Sewaliks, from the Ganges to the Jumna.

This will prove most useful in considering the treatment of the forests and in determining the area available for grazing and conservancy.

Mr. Hill was employed on this work to the close of the season, except for a short time when he was assisting me in the office.

About one-half of his line has been surveyed, its length being 28 miles.

Points in the Eastern Dún fixed by Captain Thuillier.

15. I am indebted to Captain Thuillier, R.E., in charge of the Great Trigonometrical Survey party, for sending one of his European surveyors to the Eastern Dún, to fix points of which I have availed myself to close my traverses.

Coming in from the field and commencement of recess work.

16. Most of the party came in from camp about the 1st June, when I dismissed all kalassies who could be spared, and sent on leave all native surveyors for whom I have not employment in the office.

Those of my establishment who remain are now engaged in computing the boundary traverses of the Eastern Dún, and in drawing the maps from the plane-tables.

Contraction of the deal plane-tables.

17. I found considerable inconvenience and difficulty from the shrinking and expansion of of the deal plane-tables. One which I measured had, during the dry weather, contracted as much as $\frac{1}{4}$ inch on a distance of 20 inches (or 400 chains) which will render it difficult to fit the work together.

Warping of plane-table rulers.

18. The plane-table rulers supplied to me are very bad, the ebony being very thin and liable to warp; after a few days' use they become so much twisted as to be almost useless.

Chain triangulation.

19. I continued to survey the banks and islands of the "raus" by means of the system of chain triangulation alluded to in my former report, but I am sorry to say that the work did not turn out well, and I fear that I must abandon the system in broken and confined ground, though it will be capable of employment in the more open localities.

Mr. W. H. Reynolds, Assistant Conservator of Forests.

20. Mr. Reynolds managed the camp office successfully until he commenced plane-tabling. In the latter work he was assisted at first by two native surveyors, and afterwards this number was increased by four additional men sent to him for instruction.

His out-turn of plane-tabling has been about 35$\frac{3}{4}$ square miles. This occupied him about five months, being at the rate of a little over seven miles per month. He was away in the Eastern Dún for 15 days during May, but his native surveyors continued working during this period.

Mr. Reynolds has given me every satisfaction, both as regards the assistance he has afforded me in the general conduct of the survey, and the work which he has himself turned out.

Mr. H. C. Hill, Assistant Conservator of Forests.

21. Mr. H. C. Hill, who is one of the officers trained in France, has worked well at the demarcation alluded to in a former paragraph. He did no surveying this season, but is now assisting me in the computations.

He has not hitherto had much practical experience of surveying, but he shews much aptitude for the work, and I feel confident will very quickly master all that remains for him to learn.

Mr. G. P. Chill.

22. Mr. Chill's outturn of work, with at first 5 and afterwards 6 native assistants, has been about 40¼ square miles, being at the rate of 5¾ square miles per mensem. He has taken great pains with the instruction of the native surveyors placed under him, and they are turning out most satisfactorily.

When they joined him at the commencement of the season they knew nothing of plane-tabling, and had they been as skilled then as they are now, the outturn would have been much increased.

In addition to the area above mentioned which has been entirely completed, his native assistants have surveyed the drainage of 2½ square miles.

I consider that much credit is due to Mr. Chill for the manner in which he has brought out his native assistants.

Mr. G. K. Allnutt.

23. Mr. Allnutt unfortunately remained absent without leave for some days at the commencement of the season, but since his return to duty he has been applying himself very steadily to his work.

His outturn of work has been 42 square miles, or 6 square miles a month.

The drainage of 10½ square miles of his next sheet have also been surveyed by his native assistants.

I am much pleased with the way in which he has instructed these men; some of them have made most satisfactory progress.

Mr. T. S. Marten.

24. Mr. Marten joined me on the 14th March. He has done plane-tabling in the revenue survey, but no topographical sketching of the kind on which I employed him during this season.

He requires a good deal of practice yet in this style of work, but I hope that next season he will be able to make a better show.

He completed about 15½ square miles, or 6 square miles a month, but I am not sure whether all his results can be utilized.

He has in addition to the above had the drainage of 2¼ square miles surveyed.

Mr. A. W. Hall.

25. Mr. A. W. Hall is quite a beginner, and had never done any plane-tabling before.

He however worked very hard, and what he has done appears to be of good quality.

Practice will enable him to get over the ground more quickly, and I am sure that he will turn out well.

He did 2½ square miles or 1 square mile a month.

Babú Huran Chander.

26. I had one native surveyor employed in sketching ground, *viz.*, Babú Huran Chander Dutt, who was formerly in No. 4 party of the topographical survey.

He did 8½ square miles or nearly 3 square miles a month; his work is rather coarse, and he requires a good deal more practice.

General remarks on plane-tabling.

27. I cannot help feeling disappointed at the slow rate at which the plane-tabling is turned out. It will be seen that the rate at which the skilled plane-tablers have worked does not vary very much, and as I feel confident that all have done the utmost possible under the circumstances, I suppose that the rates shewn do not differ very much from what we may expect in such ground as this, and when working on the 4-inch scale.

The difficulties of the ground are very considerable, and were alluded to in my last report.

The scarcity of water, especially as the season advances, renders it necessary to go long distances to and from work over bad ground.

I have found great difficulties in inducing the native surveyors to camp on their work in the interior of the hills, as they fear wild elephants and other animals with which the Sewaliks range abounds.

Some time was of course taken up, especially at the commencement of the season, in instructing the native surveyors, and as they are now so much improved, an increase of pace may be expected next season.

28. The work executed during the season may be thus summarized:—

Summary of work.

Plane-tabling completed about	144½ square miles.		
„ drainage taken out	15¼ „		
		159¾	square miles.
Boundary-traversing computed	22 miles.		
„ „ to be computed	280 „		
		302	miles.
Interior-traversing computed with interpolation of Rau Heads	255 „		
Interior-traversing to be computed	99 „		
„ „ plotted by angles	180 „		
		534	„
Total		836	„

When the men in the camp office could be spared from the computations, they were employed in coloring Mr. Reynolds' Hazára maps, 290 sheets of which have been distributed.

29. I erected 10 pucka pillars on the following stations, *viz.*, station No. 35 :—

Erection of pucka pillars on trigonometrical stations.

Kúnjá.	Dínduwála.
Rámpur (on Assun).	Kedárawála.
Bhaugáni.	Rúddarpur..
Rámpur (on Jumna).	Damet.
Játowála.	

30. Captain Thuillier is drawing up an index chart which will, I am told, be photozincographed. As soon as I can obtain a copy, I will submit a supplementary report shewing the amount of work which has been done and which remains to be done in this Forest Division.

Amount of work remaining to be done.

A.

List of Raus traversed and computed during the season 1873-74.

Names of Raus.	Length.		Correction on hypothenuse.	Remarks.
Timli	432	75	2·3	
Sahansra	489	46	8·1	
Sháhjehánpur	840	53	1·0	
Bagori	743	01	9·1	
Kháironwála	776	46	3·7	
Gir	600	22	2·0	
Narwar	465	77	1·8	
Kotri	805	58	2·68	
Karanudi	522	05	1·7	
Búra Saiad	213	72	1·0	
Daulawála	327	79	9·9	
Shahkúmri	600	77	3·0	
Partitpúr	338	24	2·1	
Sunikhala	328	19	9·2	
Chapri	323	74	1·7	
Ramghar; Káluwála	393	13	1·1	
Bhúl	354	72	5·62	
Jonsal	461	·63	3·7	
Káluwála	671	01	2·1	
Khujnawar	893	04	1·3	
Rani	339	13	1·7	
Durrarit	471	46	12·2	An error has occurred in this.
Sahansra (Northern)	349	55	12·10	The plane-tabler was waiting for this and there was not time to re-survey it.
Sharpur Kaluwála	287	75	5·53	
Súkh	308	73	7·39	
Kántawála (Amsot)	275	39	4·4	
Mának Sid	230	23	2·77	
Kuncha	177	04	10·6	
Augi páni	298	65	2·78	
Karwá páni	194	07	2·41	
Gojria	368	91	1·5	
Chimni	354	85	9·56	
Shahkumri (Northern)	247	24	3·22	The plane-tabler was waiting for the portion of ground in which this "rau" is, and there was not time to re-survey it.
Chamárwála	273	24	14·64	
Daulwála (S.)	244	63	7·10	
Barkala (Northern)	345	72	8·23	
Báus	378	35	5·28	
Jehádrá	385	20	5·87	
Chilhore	123	36	12·13	
Patrauli	137	14	4·06	
Nandawáli	116	90	6·89	
Suriwáli (Northern)	143	74	4·99	
Jamanwali	129	45	6·68	
Karaundi	210	67	3·66	
Bhainse (East)	356	11	3·49	
Bhainse (West)	338	17	8·07	This was connected with a "rau" on which a correction had been applied, and there was not time to re-survey it.
Kaimre	185	08	17·56	
Bánga	320	33	1·84	
Total	18,172	90		

Or 227 miles with an average correction of 5·4 on the hypothenuse.

F. BAILEY, *Captain, R.E.,*
Superintendent, Forest Surveys.

B.

Theodolite circuits in the Western Dún round Government boundary lines surveyed and computed during the season 1873-74.

Names of Main Circuits.	Length.		Correction on hypothenuse.	Remarks.
	Chains.	Links.		
M. C. round Sháhjehánpur	647	36	0·93	
Mr. Powell's land	1,082	15	1·42	
Total . .	1,729	51		
Miles . .	21·6			

Average correction 1·17 per 1,000.

F. BAILEY, *Captain, R.E.,*
Superintendent, Forest Surveys.

No. 8—161, dated Dehra Dún, the 5th February 1875.

From—Colonel J. T. Walker, R.E., *Supdt., Great Trigonometrical Survey of India,*
To—The Under Secretary to the Government of India.

With reference to your letter No. 66, dated 18th ultimo, I have the honour to state that I have received Captain Bailey's report, dated 13th July, on the operations of the Survey Branch of the Forest Department during the field season 1873-74. In compliance with your request I will now review the operations.

2. They may be divided into two portions,—*first,* those connected with the traversing of the main lines constituting the frame work into which the topographical details have to be fitted; and *secondly,* those of the plane-tabling, for the acquisition of the topographical details.

3. With reference to the first of these, I think the system which has been pursued is very satisfactory. The principal lines have been traversed with the theodolite and chain, and connected with trigonometrical stations, and this work has been done with a degree of accuracy quite equal to what is obtained in the regular surveys. The beds of the 'Raus' and various internal divisions, all which may be considered as secondary lines, have been traversed with a card protractor mounted on the plane-table, instead of with a theodolite, and the accuracy of the results obtained with this simple instrument—which any native lad of ordinary intelligence can be readily taught to manipulate—is amply sufficient for all practical purposes. Thus, one of the principal objects for which the Forest Survey Department was temporarily affiliated with the Trigonometrical Survey has been gained, for forest survey work conducted in this manner can be combined with the work of the regular surveys.

4. In the plane-tabling of the topographical details an equal amount of success has not been obtained. This, however, is only what might have been expected; for traversing is a purely mechanical operation, the details of which can be easily learnt; but the topographical delineation of hills and broken ground, such as are comprised within the forests of the Dún and the Sewaliks, requires considerable artistic skill, and—what perhaps is even more rare—considerable judgment in deciding what should be shewn in detail and what generalized or omitted altogether. Captain Bailey's topographers appear to me to have attempted to shew a great deal more than there is any necessity for; the amount of penmanship in the contouring is excessive and entails a great deal of labour; it also tends to confuse the map, and its value for the purposes of forestry is questionable.

5. I think that Captain Bailey has acted very judiciously in training a body of natives to do the topographical sketching under European superintendence; for such work, done in such a manner as to furnish all the details which have been specified by forest officers as necessary for their requirements (*vide* paragraph 7 of my No. 80—1091, dated 29th August 1873), must be done by the very cheapest agency procurable, and even then its expense may be found to be out of all proportion to the value of the forests. In his 27th paragraph, Captain Bailey says he "cannot help feeling disappointed at the slow rate at which the plane-tabling is turned out," notwithstanding that "all have done the utmost possible under the circumstances." Further on in the same paragraph he expresses his belief that the rates shewn do not differ very much from what may be expected for a survey of such ground on the four-inch scale. And his assistant, Mr. Reynolds, a practised surveyor of many years' standing, appears to hold similar views as to the slowness and tediousness of the operations that are needed to satisfy the requirements of forestry; for the proposals which he submitted to the Government* regarding the survey of the Khagan and Siran Forest reserves, would, as shewn in my No. 319—1002, dated 27th August, have entailed an expenditure of as much as Rs. 360 per

* In his No. 180, dated 21st August 1874, to the Inspector-General of Forests.

square mile, though the survey was only to be done on the two-inch scale, and the ground had already been surveyed professionally on that scale.

6. Captain Bailey has endeavoured to assimilate his work in the Dún to what it would have been had it been executed by the regular survey. Now the work of a professional surveyor is regulated by the scale of his map, and, unless expressly told not to do so, he considers it his duty to insert all details which the scale is capable of representing. Captain Bailey has acted on the same principle not merely in imitation of the regular survey, but because this appeared to be wanted to satisfy the requirements of the forest officers as specified by themselves. It is most clear, however, that those requirements cannot be satisfied by the Forest Survey Department in any reasonable period of time, unless the Government is prepared to increase it enormously and spend large sums of money in doing so; whereas if I may judge by the pressure which has recently been put on myself to effect large reductions of expenditure in the Great Trigonometrical Survey, the money is not available. Under these circumstances it will not, I trust, be considered improper if I now offer a few suggestions on the subject of the scope of the operations.

7. Clearly the Forest Survey Department should not attempt to do more than it has the means of doing; a line must be drawn between the practicable and the impracticable; and I think no better line can be adopted than that which separates those operations of a survey which govern the scale of the maps from those which are governed by that scale; or in other words, the line which separates the triangulation and traversing from the topography. The traverses necessarily govern the scale of the maps, for they must be plotted on a scale sufficiently large to shew all the sinuosities of the boundaries and dividing lines; the intricacy of these will vary with local circumstances, rendering it advisable to employ different scales for forests of different value; but here the question of scale is a matter of little importance as regards cost, for the details given in the field books of the traversers can be plotted with as great rapidity on a large as on a small scale, and only more paper is wanted. On the other hand, the topography is governed by the adopted scale, for the surveyor is expected to insert all the details which can be represented on his map; here, therefore, a difference of scale materially affects the question of cost, as the time expended on topographical plane-tabling is practically found to increase in a greater proportion than the increase of scale. Thus, it will be evident that the filling-in of the topographical details may operate insidiously to enhance the cost of the survey enormously, even when the scale adopted is no larger than will suffice to indicate the main lines of demarcation.

8. There can be no question that the scale of a working map for the purposes of forestry should be sufficiently large to shew all the details of the lines of demarcation, both external and internal, and the positions of the pillars and permanent marks on them, minutely and clearly. A map containing these details, and nothing else whatever, would be a very valuable map, though it would only be a skeleton. The Forest Survey Department, as at present constituted, cannot do more than construct such skeleton maps, and get over the ground with sufficient rapidity to satisfy the calls on it; but this, I believe, it can do, and I think that its duties should be restricted to doing this, and that it should not attempt to give any topographical delineation whatever, excepting in the rudest manner.

9. Furnished with a good skeleton map, the Forest Conservator will always be able to trace the principal lines of demarcation, to sub-divide the original blocks to any extent that may be needed, and to shew the sub-divisions on the map. With a very slight knowledge of surveying, he will be able by degrees to add to the map whatever else may be required to facilitate the working of the forest; for when there are fixed points all round, within easy reach, the difficulties of laying down interior details with sufficient accuracy are very slight; and, during his periodical inspections of the forest, the Conservator must have many opportunities of inserting such details into his skeleton map.

No. 302, dated the 11th March 1875.

From—The Officiating Secretary to the Government of India,

To—The Superintendent of the Great Trigonometrical Survey of India.

I AM directed to acknowledge the receipt of your letter No. 8-161, dated the 5th ultimo, and to convey the thanks of the Governor General in Council for your valuable review of the work performed by the Survey Branch of the Forest Department during the field season of 1873-74.

2. With reference to your proposal that the maps constructed by the Forest Survey Branch should not attempt to give any topographical delineation, I am directed to state that in those forests where the external and internal demarcation lines have been completed Captain Bailey will be requested to carry out your suggestion in its entirety. It seems to His Excellency in Council, however, probable that the Forest Survey Branch will in many cases have to commence work in forest districts where the internal sub-division lines have not yet been marked off on the ground, and where the boundaries of the forests will, either by the settlement of grazing and other forest rights and privileges or by the establishment of new villages, sooner or later undergo considerable modifications.

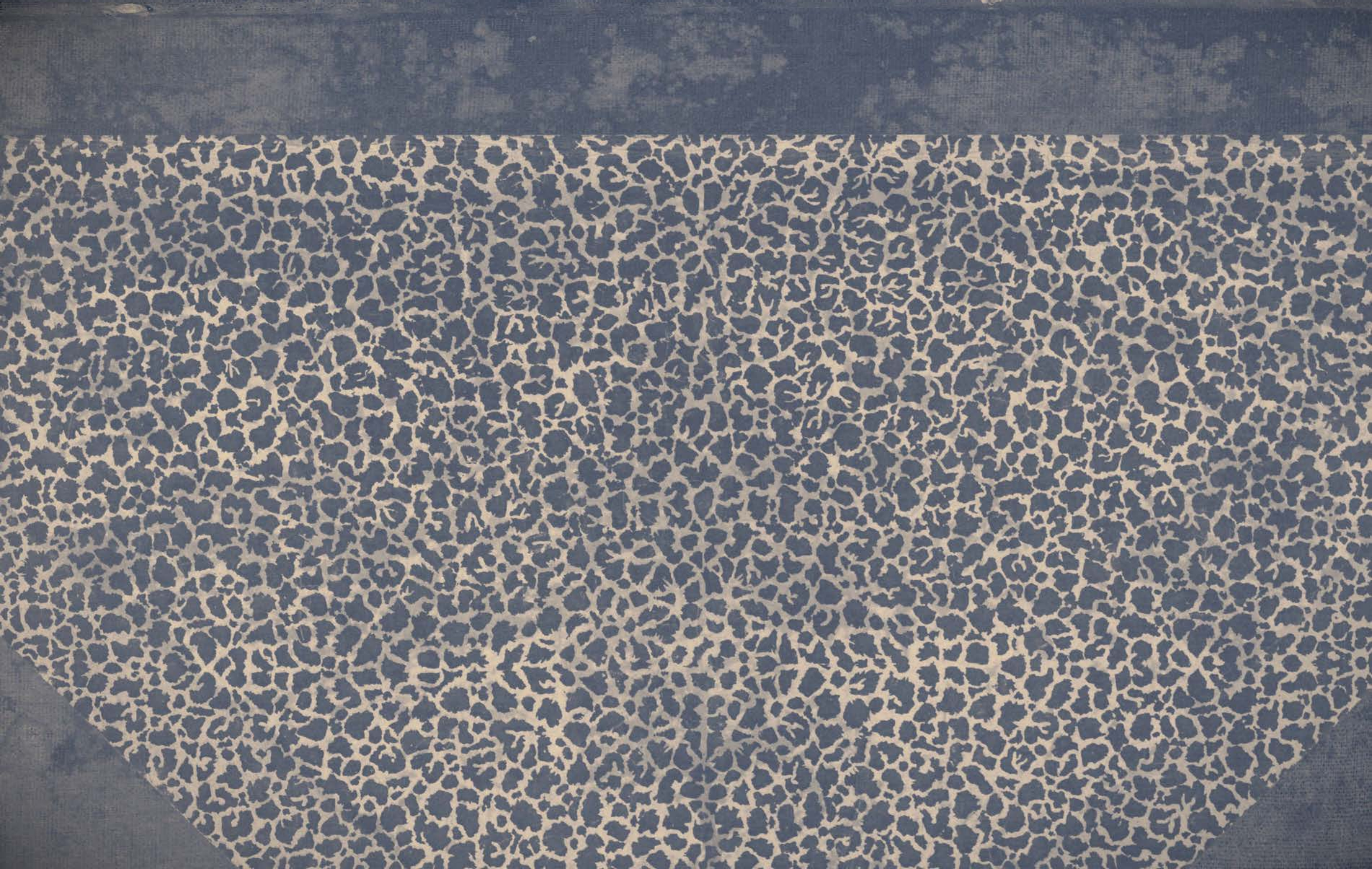
3. In such cases it may not be possible to avoid giving a certain amount of topographical delineation, but Captain Bailey will be requested even in such cases to bear in mind your suggestion and to restrict the selection of topographical features to be represented on the map to what is absolutely necessary to guide the local forest officers in demarcating compartments or in laying down fresh outer boundaries that may hereafter be required for the settlement of grazing or other forest rights or privileges or for the establishment of villages within the forests.

No. 303.

COPY forwarded to the Superintendent of Forest Surveys for information and guidance.

00108351

Digitized with financial assistance from

Government of Maharashtra

on 01 February, 2020